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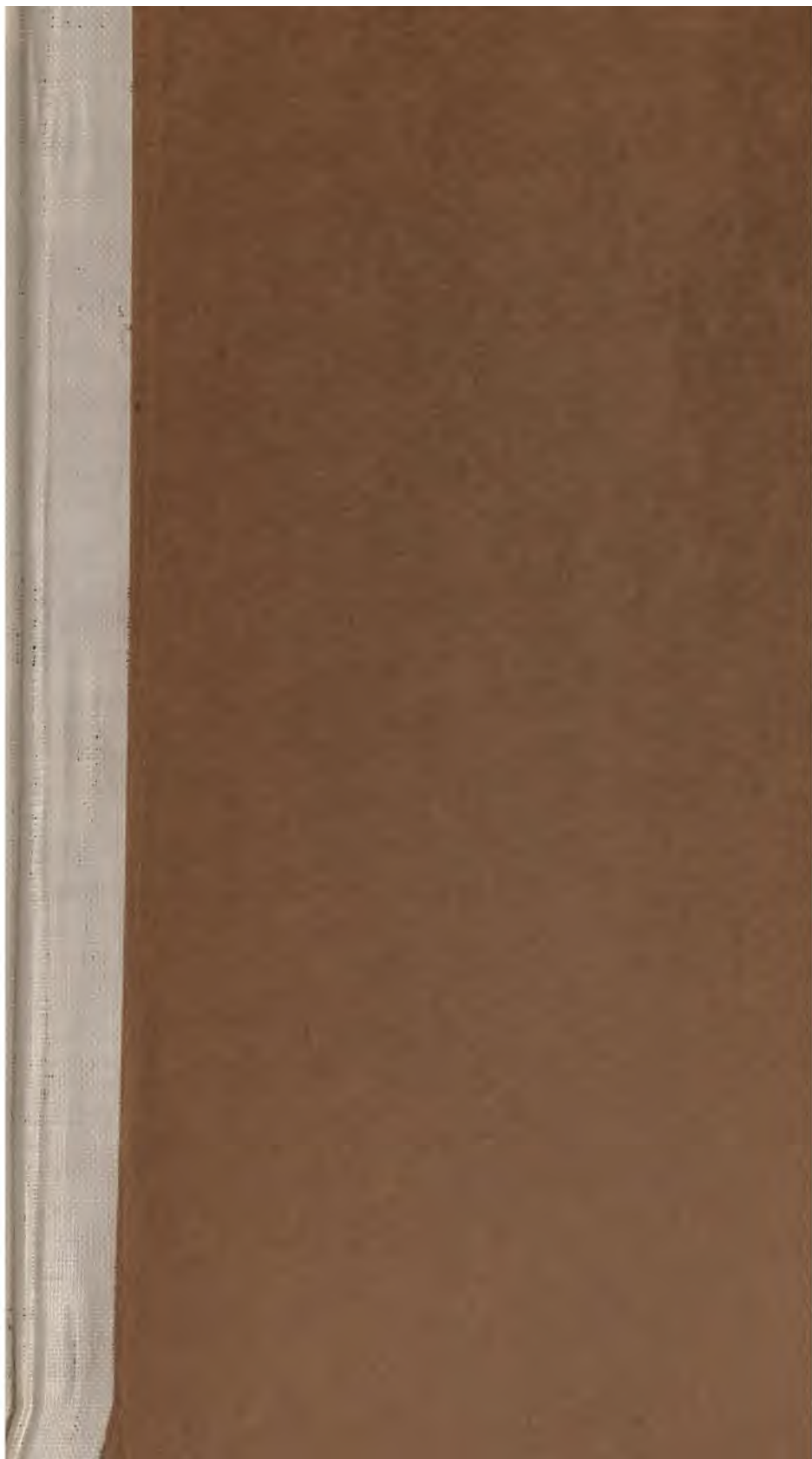
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CHAPTER II.

*[Boas, Franz]*

STATISTICS OF GROWTH.

WASHINGTON:  
GOVERNMENT PRINTING OFFICE,  
1905.

# ANTHROPOLOGY



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## CHAPTER II.

### STATISTICS OF GROWTH.

By FRANZ BOAS and CLARK WISSLER.

During the last thirty years a vast amount of anthropometric material relating to physical and mental growth has accumulated. Unfortunately, up to the present time there has been little agreement in regard to the methods of collecting and of treating such material. The following pages contain a discussion of some of the more important problems which have a bearing upon the methods of collecting and reducing observations on growth.

In a paper published in the Report of the Commissioner of Education for 1896-97 (Chap. XXXIV, pp. 1541-1599), F. Boas discussed some of the data on the growth of American children that were available at the time, and, in a theoretical introduction, he treated some of the problems that confront us in the discussion of material of this character. In that paper the effect of retardation and acceleration of growth upon the distribution of measurements was somewhat fully discussed. It was shown that the assumption of a symmetrical distribution of variations in period—i. e., of accelerations and retardations—following the laws of chance gives an adequate explanation of the characteristics of the observed curves of growth. (Ibid., p. 1552.)

The verification of this theory is of great importance, because, if it is correct, it follows that the developmental stage of a child at a certain period depends primarily on phenomena of retardation and acceleration, which influence the whole body at the same time, so that all measurements should show a tendency to vary in the same direction; either all of them would tend to lag behind the normal average or all would be in advance of it. If this is so, then the assumption that is so often made, that during a period of energetic physical growth there is a rest of mental development and vice versa, would lose much of its probability.

Assuming that during the period of growth deviations from the normal in the values of a certain measurement are partly due to variations in period, partly to hereditary and other causes of a permanent character, it would follow that other measurements of the same individual would be affected by the same groups of causes, particularly by the same variation in period. The more rapid the rate of growth, the greater will be the effect of variation in period upon all the different measurements. Retardation of developmental period, for instance, would considerably depress the values of all the measurements of the individual. Consequently, the correlations between different measurements ought to be closer during periods of rapid growth than at other periods.

We have investigated this problem by means of statistics collected in Worcester, Mass., and Toronto, Ontario, and by Peckham's measurements collected in Milwaukee, Wis., which the collector had the great kindness to place at our disposal.



Unless stated otherwise, the theory and plan of investigation were by F. Boas, while the calculations were made by Clark Wissler.

The theory of correlations during the period of growth may be as follows: We assume that the value of a certain measurement  $d$  upon variation in period, partly upon other causes, and that the growth is proportional to time. We call  $\tau$  the deviation in time amount of growth during the period  $\tau$ , while the deviations due to other causes may be called  $x$ . The total deviation,  $\xi$ , from the normal for any  $i$  given age will then be

$$\xi = d_1\tau + x.$$

For another measurement of the same individual the corresponding deviation may be called  $d_2$ ,  $y$ , and  $\eta$ . Then

$$\eta = d_2\tau + y.$$

We will designate averages by brackets.

$$[\xi^2] = d_1^2[\tau^2] + [x^2]$$

$$[\eta^2] = d_2^2[\tau^2] + [y^2]$$

$$[\xi\eta] = d_1d_2[\tau^2] + [xy]$$

If we call  $[\xi^2]$ ,  $[\eta^2]$ ,  $[\xi\eta]$ ,  $[\tau^2]$ ,  $[x^2]$ ,  $[y^2]$ ,  $[xy]$ , respectively,

$\mu_1^2$ ,  $\mu_2^2$ ,  $R\mu_1\mu_2$ ,  $\sigma_1^2$ ,  $\sigma_2^2$ ,  $r\sigma_1\sigma_2$ , we have

$$\mu_1^2 = d_1^2\sigma_1^2 + \sigma_1^2$$

$$\mu_2^2 = d_2^2\sigma_2^2 + \sigma_2^2$$

(1)

$$R\mu_1\mu_2 = d_1d_2\sigma_1\sigma_2 + r\sigma_1\sigma_2.$$

It appears from this that, if  $r\sigma_1\sigma_2$  remains fairly constant,  $R\mu_1\mu_2$  is greater, the greater  $d_1d_2\sigma_1\sigma_2$ . It does not seem probable that  $r\sigma_1\sigma_2$  shows very great changes during the later periods of growth. If, therefore, it is shown that  $R\mu_1\mu_2$  increases with the rapidity of growth—that is, with  $d_1d_2$ —our theory would seem to be corroborated.

In order to investigate this question, we have calculated the correlations between stature, weight, height sitting, length of head, and width of head for the measurements collected in Worcester, Mass. Unfortunately, the data were not long enough to give quite satisfactory results. We give first the averages and variabilities for various measurements.

TABLE Ia.—Averages and variabilities of measurements of boys, Worcester, Mass.

[Figures printed in italics indicate the number of individuals measured. Figures in parentheses indicate the number of measurements.]

Age.	Stature.	Height sitting.	Weight.	Length of head.	Width of head.	Length of foot.
6	1,129±61 <i>118</i>	622±30 <i>110</i>	45.7±5.5 <i>109</i>	178.2±6.7 <i>105</i>	140.7±5.1 <i>105</i>	3
7	1,179±50 <i>203</i>	642±28 <i>203</i>	49.7±5.9 <i>202</i>	179.6±6.4 <i>145</i>	142.1±4.6 <i>142</i>	3
8	1,228±53 <i>198</i>	663±27 <i>187</i>	54.1±6.4 <i>190</i>	180.1±5.6 <i>130</i>	143.6±4.8 <i>130</i>	3
9	1,278±55 <i>252</i>	685±30 <i>225</i>	59.4±7.3 <i>220</i>	181.2±6.3 <i>167</i>	144.0±4.7 <i>167</i>	3
10	1,329±59 <i>352</i>	711±31 <i>228</i>	65.8±8.5 <i>221</i>	181.7±5.5 <i>157</i>	144.5±4.6 <i>158</i>	3
11	1,374±62 <i>244</i>	727±35 <i>215</i>	71.3±10.3 <i>210</i>	183.4±6.1 <i>151</i>	144.6±5.0 <i>151</i>	3
12	1,426±64 <i>274</i>	748±35 <i>256</i>	78.4±12.2 <i>246</i>	183.3±6.1 <i>177</i>	145.6±5.6 <i>177</i>	3
13	1,479±77 <i>253</i>	771±39 <i>224</i>	86.9±15.7 <i>214</i>	185.2±6.4 <i>168</i>	146.8±4.8 <i>168</i>	4
14	1,546±84 <i>228</i>	806±42 <i>228</i>	98.2±16.5 <i>203</i>	187.2±6.4 <i>154</i>	146.9±4.8 <i>154</i>	4
15	1,620±84 <i>191</i>	842±46 <i>183</i>	113.8±20.8 <i>162</i>	188.3±6.2 <i>152</i>	148.1±4.6 <i>152</i>	4
16	1,660±65 <i>190</i>	866±35 <i>116</i>	122.6±17.1 <i>96</i>	190.8±6.4 <i>96</i>	149.2±4.8 <i>96</i>	4
17	1,686±56 <i>53</i>	885±33 <i>51</i>	132.7±14.9 <i>39</i>	191.6±6.0 <i>49</i>	149.5±4.9 <i>49</i>	4

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TABLE Ib.—Averages and variabilities of measurements of girls, Worcester, Mass.

[Figures printed in italics indicate the number of individuals measured. Measurements in millimeters and in pounds avoirdupois.]

Age.	Stature.	Height sitting.	Weight.	Length of head.	Width of head.	Length of forearm.	Width of hand.
1	1,120±47 <i>104</i>	616±27 <i>99</i>	43.6±4.8 <i>97</i>	173.1±4.6 <i>84</i>	138.0±3.5 <i>84</i>	304±18 <i>49</i>	58±5 <i>28</i>
2	1,171±56 <i>115</i>	639±29 <i>120</i>	47.9±6.1 <i>123</i>	174.7±6.0 <i>101</i>	139.1±4.1 <i>101</i>	315±24 <i>63</i>	58±3 <i>49</i>
3	1,221±58 <i>116</i>	660±31 <i>116</i>	51.9±6.6 <i>112</i>	175.0±5.9 <i>105</i>	140.3±4.3 <i>105</i>	328±18 <i>64</i>	60±3 <i>75</i>
4	1,270±54 <i>117</i>	680±28 <i>152</i>	58.0±8.4 <i>147</i>	176.3±6.3 <i>118</i>	140.2±4.8 <i>118</i>	337±15 <i>69</i>	62±3 <i>71</i>
5	1,310±65 <i>215</i>	705±34 <i>174</i>	64.1±10.5 <i>170</i>	177.8±5.9 <i>160</i>	142.1±4.5 <i>160</i>	357±22 <i>65</i>	65±3 <i>80</i>
6	1,372±64 <i>232</i>	736±36 <i>202</i>	70.0±10.4 <i>199</i>	178.2±5.4 <i>152</i>	142.1±4.9 <i>152</i>	370±23 <i>83</i>	67±4 <i>103</i>
7	1,443±72 <i>208</i>	758±37 <i>208</i>	81.0±13.1 <i>165</i>	180.0±5.4 <i>165</i>	143.2±4.7 <i>165</i>	382±19 <i>85</i>	70±4 <i>116</i>
8	1,490±69 <i>190</i>	788±42 <i>189</i>	89.7±15.3 <i>182</i>	181.7±6.8 <i>112</i>	144.0±4.9 <i>112</i>	407±24 <i>70</i>	72±4 <i>82</i>
9	1,539±72 <i>164</i>	815±40 <i>151</i>	100.6±16.8 <i>149</i>	182.5±6.4 <i>115</i>	144.0±5.3 <i>115</i>	413±20 <i>88</i>	74±3 <i>54</i>
10	1,569±53 <i>138</i>	835±32 <i>136</i>	106.2±13.9 <i>109</i>	184.8±5.2 <i>109</i>	145.4±4.5 <i>109</i>	427±20 <i>88</i>	74±4 <i>36</i>
11	1,572±60 <i>107</i>	840±29 <i>107</i>	108.7±12.1 <i>107</i>	183.7±5.7 <i>91</i>	144.6±4.9 <i>91</i>	422±26 <i>77</i>	74±4 <i>19</i>
12	1,591±52 <i>69</i>	853±31 <i>69</i>	114.6±13.6 <i>64</i>	184.8±5.5 <i>69</i>	145.2±4.3 <i>69</i>	-----	-----

In Table II are contained the coefficients of correlation for various ages and the number of observations from which the coefficients have been calculated. Table III contains the values for the product  $R\mu_1\mu_2$  and the approximate values of  $d_1d_2$ .

TABLE IIa.—Correlations for boys, Worcester, Mass.

[ $n$ =number of cases;  $r$ =coefficient of correlation.]

Age.	Stature and weight.		Stature and height sitting.		Weight and height sitting.		Stature and length of head.		Stature and width of head.		Height sitting and length of head.		Height sitting and width of head.		Weight and length of head.		Weight and width of head.		Length and width of head.	
	$r$	$n$	$r$	$n$	$r$	$n$	$r$	$n$	$r$	$n$	$r$	$n$	$r$	$n$	$r$	$n$	$r$	$n$	$r$	$n$
6	0.86	109	0.78	110	0.77	110	0.30	105	0.30	105	0.34	92	0.24	92	0.46	92	0.40	92	0.30	105
7	.78	302	.81	303	.79	302	.36	115	.27	115	.38	115	.29	115	.41	115	.30	115	.18	115
8	.60	190	.83	189	.52	189	.44	111	.19	111	.45	110	.30	110	.46	121	.25	121	.14	121
9	.72	220	.79	225	.70	220	.41	167	.23	167	.37	138	.29	138	.39	134	.40	134	.29	167
10	.83	221	.80	228	.82	221	.31	153	.31	158	.25	134	.29	134	.33	128	.34	128	.17	157
11	.88	308	.88	311	.87	305	.39	151	.29	151	.28	122	.20	121	.51	118	.35	118	.12	151
12	.81	216	.88	256	.87	217	.36	177	.24	177	.26	159	.19	156	.45	159	.26	157	.30	177
13	.74	214	.90	224	.81	214	.32	168	.28	168	.21	139	.25	139	.23	130	.34	130	.15	168
14	.87	202	.92	228	.80	203	.39	154	.11	154	.39	154	.14	154	.54	199	.29	189	.34	164
15	.81	162	.85	191	.79	162	.42	152	.33	152	.43	154	.38	144	.48	126	.42	126	.14	162
16	.71	93	.79	116	.67	93	.31	96	.17	96	.25	92	.14	92	.54	69	.44	69	.28	96
17	.56	39	.77	51	.51	39	.19	49	.23	48	.16	67	.20	47	.37	35	.28	35	.18	48

TABLE IIb.—Correlations for girls, Worcester, Ma

[ $n$ =number of cases;  $r$ =coefficient of correlation.]

Age.	Stature and weight.		Stature and height sitting.		Weight and height sitting.		Stature and length of head.		Stature and width of head.		Height sitting and length of head.		Height sitting and width of head.		Weight and length of head.	
	$r$	$n$	$r$	$n$	$r$	$n$	$r$	$n$	$r$	$n$	$r$	$n$	$r$	$n$	$r$	$n$
6...	0.68	97	0.67	99	0.59	97	0.21	84	0.34	84	0.22	79	0.38	79	0.23	7
7...	.71	123	.74	129	.69	123	.87	101	.17	101	.40	87	.23	87	.50	8
8...	.79	145	.81	146	.60	142	.32	104	.12	105	.81	85	.06	85	.39	8
9...	.79	147	.81	152	.76	147	.88	118	.17	118	.33	96	.10	96	.51	9
10...	.82	170	.84	174	.77	170	.86	160	.18	160	.41	119	.28	119	.28	115
11...	.88	199	.83	202	.84	199	.37	152	.12	152	.32	123	.14	123	.41	120
12...	.74	201	.84	208	.85	201	.88	145	.44	145	.33	121	.28	121	.36	114
13...	.70	183	.80	190	.72	183	.40	142	.24	142	.52	119	.33	119	.51	113
14...	.74	149	.85	151	.75	146	.37	115	.42	115	.40	102	.42	102	.50	99
15...	.57	133	.81	133	.61	134	.14	109	.09	109	.14	98	.17	98	.21	93
16...	.65	100	.71	101	.71	100	.27	85	.15	85	.45	85	.23	85	.41	84
17...	.59	64	.71	69	.47	64	.32	69	.06	69	.06	69	.06	69	.49	64

TABLE III.—Values of  $R\mu_1\mu_2$  and of  $d_1d_2$ .

Age.	Boys.						Girls.					
	Stature—Weight.		Stature—Height sitting.		Weight—Height sitting.		Stature—Weight.		Stature—Height sitting.			
	$R\mu_1\mu_2$	$d_1d_2$	$R\mu_1\mu_2$	$d_1d_2$	$R\mu_1\mu_2$	$d_1d_2$	$R\mu_1\mu_2$	$d_1d_2$	$R\mu_1\mu_2$	$d_1d_2$	$R\mu_1\mu_2$	$d_1d_2$
6.....	290	200	1,400	1,000	130	80	150	200	800	1,150		
7.....	230	210	1,100	1,000	120	84	270	200	1,300	1,100		
8.....	240	240	1,200	1,060	180	101	300	250	1,500	1,000		
9.....	280	290	1,300	1,200	160	139	360	335	1,200	1,210		
10.....	410	288	1,500	1,010	220	126	560	300	1,800	1,150		
11.....	520	302	1,900	880	280	118	560	467	1,900	1,430		
12.....	630	406	2,000	1,140	370	172	680	617	1,900	1,950		
13.....	920	600	2,700	1,740	500	290	730	470	2,200	1,340		
14.....	1,210	938	3,300	2,520	560	482	890	287	2,500	860		
15.....	1,420	695	3,300	1,710	760	366	420	64	1,400	190		
16.....	800	310	1,800	680	390	197	470	83	1,200	150		
17.....	470	125	1,400	300	250	60	420	12	1,100	50		

The preceding tables show at once that during the period of growth between the various measurements is greater than in the adult particularly true in regard to those measurements which show the increases, i. e., stature, weight, and height sitting. Table III shows greatest values of  $R\mu_1\mu_2$  are found a little later than the greatest products  $d_1d_2$ , the difference in period being about one year in boys and in girls. This may be due to the increase of the values  $\sigma_t$ ,  $\sigma_1$ , increasing age (see p. 38).

In order to obtain a better insight into the characteristics of the during the period of growth, we have taken the averages of its values successive years and have given these averages to the middle years. are contained in the following table and are graphically represented (p. 47).

TABLE IV.—Correlations.

Age.	Boys.										Girls.									
	Stature and weight.	Stature and height sitting.	Weight and height sitting.	Stature and length of head.	Stature and width of head.	Height sitting and length of head.	Height sitting and width of head.	Weight and length of head.	Weight and width of head.	Length and width of head.	Stature and weight.	Stature and height sitting.	Weight and height sitting.	Stature and length of head.	Stature and width of head.	Height sitting and length of head.	Height sitting and width of head.	Weight and length of head.	Weight and width of head.	Length and width of head.
7	0.78	0.81	0.69	0.37	0.22	0.39	0.28	0.44	0.28	0.21	0.73	0.74	0.63	0.30	0.21	0.31	0.22	0.37	0.30	0.23
8	.73	.81	.67	.40	.23	.40	.29	.42	.28	.20	.76	.79	.68	.36	.15	.35	.13	.47	.33	.23
9	.75	.81	.68	.39	.24	.36	.29	.36	.26	.19	.80	.82	.71	.35	.16	.35	.15	.39	.32	.23
10	.81	.82	.80	.37	.23	.37	.28	.41	.23	.19	.83	.83	.79	.37	.16	.35	.17	.40	.35	.23
11	.84	.85	.85	.35	.23	.36	.26	.45	.23	.20	.81	.84	.82	.37	.25	.35	.23	.35	.27	.26
12	.81	.89	.85	.36	.27	.35	.23	.40	.23	.19	.77	.82	.80	.38	.27	.39	.25	.43	.31	.23
13	.81	.90	.83	.36	.21	.32	.19	.41	.30	.26	.73	.83	.77	.38	.37	.42	.34	.46	.41	.32
14	.81	.89	.80	.38	.24	.34	.26	.42	.35	.21	.67	.82	.69	.30	.25	.35	.31	.41	.38	.32
15	.80	.85	.75	.37	.30	.36	.22	.52	.38	.25	.65	.79	.69	.26	.22	.33	.27	.37	.36	.36
16	.69	.80	.66	.31	.25	.28	.24	.46	.38	.20	.60	.74	.60	.25	.10	.32	.15	.37	.31	.33

We have not plotted the variations of the correlations of head measurements, because these changes are too small and too uncertain. All the others show very clearly a rise of correlation during the period of rapid growth, followed by a decline during the period of decreasing growth. In accordance with the earlier periods of rapid growth and of decreasing growth the correlations of girls reach their maxima a year or two before those of boys, and it appears that the absolute maxima of correlations of boys are greater, corresponding to their absolutely greater rapidity of growth during the prepubertal period. As a consequence the values of the coefficients of correlation for girls are always a trifle lower than those of boys, except about the eighth, ninth, and tenth years.

The correlations of the head may be considered as a whole, and we have taken the averages for all the years.

TABLE V.—Correlations of head measurements with stature, height sitting, and weight.

	Length of head.		Width of head.	
	Boys.	Girls.	Boys.	Girls.
Stature.....	0.37	0.33	0.25	0.21
Height sitting.....	.32	.34	.25	.22
Weight.....	.43	.41	.32	.33

It seems very doubtful that the slight excess in the correlations for boys is significant. The striking excess of the correlations between measurements indicative of bulk of body and length of head over those between measurements of bulk of body and width of head may be due in part to the variations in size of the frontal sinuses and of the occipital protuberance, which depend more closely upon the development of the skeleton than the transversal diameter. However, it might seem that, in young children at least, other causes must be looked for to account for the considerable difference between the coefficients. It is quite probable that it is mainly an expression of the closer correlation of intero-posterior measurements among themselves, the length of head being an axial measurement, the same as stature and height sitting.

Since, owing to the insufficient number of cases, the numerical results of the Worcester series are not quite satisfactory, we decided to calculate the same data from a more extended series, from which we selected the fifth, seventh, tenth, thirteenth, and sixteenth years as representative values. The calculations were made from measurements taken in Toronto and Milwaukee. The results are given in the following tables:

TABLE VIa.—Averages and variabilities of measurements of boys.

Age.	City.	Stature.			Weight.			Height sitting.		
		Average.	$\sigma$ .	Cases.	Average.	$\sigma$ .	Cases.	Average.	$\sigma$ .	Cases.
5	Milwaukee	1,009	$\pm 45$	300	41.3	$\pm 4.2$	301	502	$\pm 36$	29
	Worcester	1,179	$\pm 50$	203	49.7	$\pm 5.9$	202	642	$\pm 28$	20
7	Toronto	1,164	$\pm 51$	930	48.7	$\pm 5.3$	930	642	$\pm 31$	93
	Milwaukee	1,166	$\pm 49$	641	48.9	$\pm 5.1$	632	635	$\pm 26$	64
10	Worcester	1,329	$\pm 59$	252	65.8	$\pm 8.5$	221	711	$\pm 31$	22
	Toronto	1,311	$\pm 61$	990	64.0	$\pm 7.5$	878	700	$\pm 32$	87
13	Milwaukee	1,313	$\pm 61$	553	65.0	$\pm 8.4$	545	699	$\pm 30$	54
	Worcester	1,479	$\pm 77$	253	86.9	$\pm 15.7$	214	771	$\pm 39$	22
16	Toronto	1,453	$\pm 78$	629	82.4	$\pm 11.6$	629	756	$\pm 38$	63
	Milwaukee	1,453	$\pm 67$	365	84.5	$\pm 11.9$	365	757	$\pm 35$	36
16	Worcester	1,600	$\pm 65$	120	122.6	$\pm 17.1$	93	806	$\pm 35$	1
	Milwaukee	1,648	$\pm 76$	53	121.6	$\pm 16.8$	57	855	$\pm 46$	1

TABLE VIb.—Averages and variabilities of measurements of girls.

Age.	City.	Stature.			Weight.			Height sitting.		
		Average.	$\sigma$ .	Cases.	Average.	$\sigma$ .	Cases.	Average.	$\sigma$ .	Cases.
5	Milwaukee	1,054	$\pm 45$	251	40.0	$\pm 4.2$	251	538	$\pm 25$	25
	Worcester	1,171	$\pm 56$	143	47.9	$\pm 6.1$	128	639	$\pm 29$	12
7	Toronto	1,159	$\pm 53$	886	47.0	$\pm 5.4$	844	649	$\pm 32$	84
	Milwaukee	1,102	$\pm 47$	533	47.1	$\pm 5.0$	537	637	$\pm 26$	53
10	Worcester	1,390	$\pm 65$	215	64.1	$\pm 10.5$	170	705	$\pm 34$	17
	Toronto	1,306	$\pm 61$	895	61.6	$\pm 8.1$	822	699	$\pm 35$	84
13	Milwaukee	1,313	$\pm 58$	556	62.6	$\pm 8.0$	541	698	$\pm 31$	53
	Worcester	1,499	$\pm 69$	213	89.7	$\pm 15.3$	183	788	$\pm 42$	18
16	Toronto	1,481	$\pm 72$	669	85.9	$\pm 13.5$	671	780	$\pm 46$	67
	Milwaukee	1,483	$\pm 79$	341	87.6	$\pm 14.7$	353	785	$\pm 40$	35
16	Worcester	1,572	$\pm 60$	107	108.7	$\pm 12.1$	100	840	$\pm 29$	10
	Milwaukee	1,577	$\pm 48$	123	110.6	$\pm 12.8$	123	843	$\pm 37$	10

TABLE VIIa.—Coefficients of correlation.

Age.	City.	Stature—Weight.				Stature—Height sitting.				Weight—Height sitting.			
		Boys.		Girls.		Boys.		Girls.		Boys.		Girls.	
		$r$	Cases.	$r$	Cases.	$r$	Cases.	$r$	Cases.	$r$	Cases.	$r$	Cases.
5	Milwaukee	0.69	(296)	0.60	(250)	0.73	(296)	0.77	(250)	0.69	(296)	0.51	(250)
	Worcester	.78	(202)	.71	(128)	.61	(205)	.74	(129)	.79	(202)	.69	(128)
7	Toronto	.70	(930)	.73	(802)	.76	(910)	.73	(900)	.70	(896)	.63	(802)
	Milwaukee	.75	(632)	.73	(585)	.84	(641)	.85	(586)	.74	(632)	.71	(584)
10	Worcester	.83	(221)	.82	(170)	.80	(228)	.84	(174)	.82	(221)	.77	(170)
	Toronto	.76	(875)	.78	(885)	.78	(853)	.79	(852)	.67	(833)	.63	(844)
13	Milwaukee	.79	(546)	.83	(546)	.80	(533)	.93	(553)	.77	(546)	.77	(544)
	Worcester	.74	(214)	.70	(183)	.90	(224)	.80	(190)	.81	(214)	.72	(183)
16	Toronto	.90	(629)	.78	(671)	.80	(600)	.72	(675)	.73	(603)	.65	(671)
	Milwaukee	.83	(359)	.77	(329)	.95	(365)	.85	(339)	.82	(355)	.73	(353)
16	Worcester	.71	(93)	.65	(100)	.79	(116)	.71	(101)	.67	(93)	.71	(100)
	Milwaukee	.81	(58)	.51	(108)	.63	(58)	.62	(108)	.80	(57)	.44	(108)

The averages for each year give us the following results:

TABLE VIIb.

Age.	Stature—Weight.		Stature—Height sitting.		Weight—Height sitting.	
	Boys.	Girls.	Boys.	Girls.	Boys.	Girls.
5	0.69	0.60	0.73	0.77	0.69	0.51
7	.74	.72	.80	.77	.74	.68
10	.79	.81	.79	.85	.75	.72
13	.82	.75	.88	.79	.79	.70
16	.76	.58	.81	.66	.74	.57

It will be noticed that the more extensive material agrees well with the measurements collected in Worcester. The averages for the values of  $R\mu_1\mu_2$  and of  $d_1d_2$  (see Table III, p. 28) give us the following results:

TABLE VIIc.

Age.	Stature—Weight.				Stature—Height sitting.				Weight—Height sitting.			
	Boys.		Girls.		Boys.		Girls.		Boys.		Girls.	
	$R\mu_1\mu_2$ .	$d_1d_2$ .	$R\mu_1\mu_2$ .	$d_1d_2$ .	$R\mu_1\mu_2$ .	$d_1d_2$ .	$R\mu_1\mu_2$ .	$d_1d_2$ .	$R\mu_1\mu_2$ .	$d_1d_2$ .	$R\mu_1\mu_2$ .	$d_1d_2$ .
5	122				73							
7	203	200	222	200	110	100	118	110	109	84	111	88
10	390	288	479	300	150	101	168	115	190	126	217	138
13	798	600	798	470	245	174	208	134	392	290	440	274
16	920	310	390	33	235	69	105	15	490	197	210	42

We may say, therefore, that increases of the values of correlations take place during the period of growth, in accordance with the demands of our theory of variability in period of development, although the correspondence between theory and observation can not be definitely determined unless we know the amount of the variability in period  $\sigma_r$ , which, as appears from equation (1), determines the value of  $R\mu_1\mu_2$ . It seems, therefore, necessary to determine the values of  $\sigma_r$ .

Considering this problem from a general point of view, it will be seen that  $\sigma_r$  is the variability of period at which a certain physiological stage of development is attained. We may investigate this variability by means of various groups of physiological data. We may, for instance, determine the variability of the period of pregnancy, of the phases of first and second dentition, of puberty, and of the appearance of the wisdom teeth. In later life we may also include the menopause and death by arterial diseases.

Unfortunately it is not easy to obtain satisfactory statistics relating to these phenomena; statistics relating to the exact period of teething are particularly unsatisfactory. We have collected data of this description, and the following pages contain the results of our inquiries.

*Pregnancy.*—Schlichting<sup>a</sup> gives the following table for the period of gestation:

<sup>a</sup> Archiv für Gynæcologie, XVI, p. 2210.

TABLE VIII.—*Period of pregnancy.*

Weeks.	Cases.	Weeks.	Cases.
34.....	3	42.....	18
35.....	18	43.....	10
36.....	16	44.....	3
37.....	53	45.....	3
38.....	77	46.....	1
39.....	118	47.....	1
40.....	100	48.....	1
41.....	35		

Average 38.49 weeks, or  $269.4 \pm 13.4$  days.

*Dentition.*—Whitehead<sup>a</sup> gives the following table for the appearance of inner pair of incisors in well-nourished children.

TABLE IXa.—*Appearance of first pair of incisors.*

Months.	Cases.	Months.	Cases.
2.....	8	8.....	96
3.....	49	9.....	81
4.....	85	10 <sup>a</sup> .....	42
5.....	85	11 <sup>a</sup> .....	22
6.....	175	12 <sup>a</sup> .....	13
7.....	100	13 <sup>a</sup> .....	5

<sup>a</sup> Interpolation.

Average  $7.15 \pm 2.51$  months.

Most of the other tables are given in a form which makes it difficult determine the average age and its variability directly. In these cases Pearson's method of curve fitting<sup>b</sup> has been applied in a somewhat simplified form, which seems satisfactory owing to the small number of available observations. The method adopted will be illustrated by our treatment of W. Onichin's tables.<sup>c</sup> He gives the following data for well-nourished children indicating the percentile frequency of the appearance of the inner incisors at various ages.

TABLE IXb.—*Percentage of children that have teeth.*

Months.	Per cent.	Months.	Per cent.
3.....	0.73	8.....	53.65
4.....	2.85	9.....	69.84
5.....	8.34	10.....	73.60
6.....	16.80	11.....	92.80
7.....	53.68	12.....	82.60

Assuming that the actual variability of time follows the laws of chance, we can determine from the tables of the probability integral the multiples of  $\sigma$  corresponding to their frequencies. Using W. F. Sheppard's tables,<sup>d</sup> we find, for instance, for the age of 7 months, that the value of 0.3368 corresponds to

<sup>a</sup> L. Fleischmann. *Klinik der Pädiatrik*, II, p. 76.

<sup>b</sup> *Biometrika*, Vol. I, pp. 265 et seq.; Vol. II, pp. 1 et seq.

<sup>c</sup> Fleischmann, p. 77.

<sup>d</sup> *Biometrika*, Vol. II, pp. 174 et seq.



sum total of frequencies under the value of  $A - 0.42\sigma$ , where  $A$  is the average,  $\sigma$  the standard variability. We may, therefore, write the equation—

$$7 = A - 0.42\sigma.$$

In the same way we find—

$$6 = A - 0.96\sigma.$$

Any two equations of this kind would give us a pair of values of  $A$  and  $\sigma$ , from all of which the most probable value may be calculated.

For the purpose of this calculation we will write, in place of the actual month, the middle month—in our case 8.0—plus or minus such differences as will give us each particular month. If we call these differences  $x$ , the middle month  $M$ , and the multiples of  $\sigma$  found from the table of the probability integral  $y$ , we can write our equations—

$$\begin{aligned} M + x &= A + y\sigma. \\ A - M &= x - y\sigma. \end{aligned} \quad (2).$$

or by taking the average of these equations for all our observations we find, since  $[x] = 0$

$$A - M = -[y]\sigma. \quad (3).$$

By multiplying (2) by  $x$ , we find

$$(A - M)x = x^2 - yx\sigma, \text{ and taking the average, } [yx]\sigma = [x^2]. \quad (4).$$

(3) and (4) give us satisfactory values for  $A$  and  $\sigma$ .

Applying this to Table IXb (p. 32), we find the following multiples of  $\sigma$  corresponding to the percentile frequencies.

Months.	$x$	$y$	$xy$
3.....	-4.5	-2.44	10.98
4.....	-3.5	-1.90	6.65
5.....	-2.5	-1.38	3.45
6.....	-1.5	-.96	1.44
7.....	-.5	-.42	.21
8.....	+.5	+.09	.04
9.....	+1.5	+.52	.78
10.....	+2.5	+.93	1.57
11.....	+3.5	+1.46	5.11
12.....	+4.5	+.94	4.05

$$[y] = -0.346 \quad [xy] = 3.428 \quad [x^2] = 8.25.$$

$$\sigma = \pm 2.41$$

$$A - M = +0.83$$

If the table signifies that each group embraces children of from 3 to 4, 4 to 5, 5 to 6, etc., months of age, this would give us an average of 8.83 months. The values for  $y$  which correspond to the lowest and highest percentages are, of course, very uncertain, and must be given in an exact calculation a very low weight, in accordance with the uncertainty of the values of  $y$ .

The available material for the calculation of the time and variability of the appearance of the first molars is still more unsatisfactory. Fleischmann<sup>a</sup> gives the following data:

<sup>a</sup> Dr. L. Fleischmann, Klinik der Pädiatrik, II. Der erste Zahndurchbruch des Kindes, p. 82.

TABLE X.—Number of children having four molar teeth.

Age (months).	Cases observed.
6-7	83
8-9	61
10-11	53
12-13	67
14-15	66
16-17	40
18-19	51

Calculated in the same manner as the preceding table, we find the average  $18.8 \pm 3.7$  months.

For the second dentition we have utilized a series of plaster casts of 1 of normal children collected by Dr. Walter Channing. These give for the teeth the following results:

TABLE XIa.—Number of children having permanent teeth.

Age.	Boys.						Girls.						
	Cases.	Inner in- cisors.	Outer in- cisors.	Canines.	Bicus-pids.	First mo- lars.	Second molars.	Cases.	Inner in- cisors.	Outer in- cisors.	Canines.	Bicus-pids.	First mo- lars.
6	23	7	1			15		46	18	4	3	7	3
7	30	12	2	1	1	25		39	31	11	1	16	9
8	27	22	7		5	27		31	26	15	3	14	12
9	40	39	27		12	40	3	42	42	25	4	19	4
10	33	33	21	11	22	33	1	34	32	28	5	25	3
11	21	21	20	13	21	21	2	30	29	29	22	25	3
12	21	21	21	18	21	21	8	22	22	22	19	22	2
13	12	12	12	11	12	12	8	16	16	14	14	16	1
14	12	12	12	12	12	12	9	9	9	8	8	9	
15								7	7	7	7		

TABLE XIb.—Percentage of children having permanent teeth.

Age.	Boys.						Girls.				
	Inner incisors.	Outer incisors.	Ca-nines.	Bicus-pids.	First molars.	Second molars.	Inner incisors.	Outer incisors.	Ca-nines.	Bicus-pids.	First molar
6	30	4			65		38	9	6	15	
7	40	6	3	3	83		79	28	2	41	
8	81	28		19	100		84	48	9	45	
9	97	67		30		7	100	59	9	45	1
10	100	63	33	66		3	94	82	14	73	
11		95	61	100		9	96	96	73	83	
12		100	85			38	100	100	86	100	
13			91			66		88	88		
14			100			75		90	90		
15								100	100		

These tables give for the appearance of the permanent teeth the following averages and variabilities:

	Boys.	Girls.
Inner incisors.....	7.5±1.4	7.0±1.6
Outer incisors.....	8.5±2.1	8.9±2.1
Bicusplds.....	9.8±1.6	9.0±2.8
Canines.....	11.2±1.4	11.3±1.0
Second molars.....	13.2±2.0	12.8±1.6

For the time of appearance of the wisdom teeth Magitot's tables<sup>a</sup> are available. He gives the following distribution for the time of appearance of the wisdom teeth:

TABLE XIIa.—*Appearance of wisdom teeth.*

Age.	Men.	Women.
18.....	9	22
19.....	10	18
20.....	38	38
21.....	50	62
22.....	53	46
23.....	46	51
24.....	31	12
25.....	6	10
Total.....	241	259

We may assume that the number of examined individuals for these ages was nearly equal, and on account of the uncertainty of the distribution we may disregard the cases outside of the limits of 18 and 25 years. If the ages mean those between one birthday and the next birthday, the averages and variabilities will be, for men, 22.2±1.7 years, and for women, 21.8±1.8 years.

Statistics which Dr. G. Meylan had the kindness to collect at our request in the gymnasium of Columbia University give the following numbers:

TABLE XIIb.—*Presence of wisdom teeth.*

Ages.	Cases.	Wisdom teeth present.	Per cent.
16.....	1	—	—
17.....	20	7	35
18.....	44	14	32
19.....	47	25	53
20.....	29	25	86
21.....	18	15	83
22.....	13	13	100
23.....	6	6	100
24.....	8	8	100
25.....	5	3	60
26.....	—	—	—
27.....	3	2	67

Average, 19.3±2.1 years.

<sup>a</sup>Bul. de la Soc. d'Anthropologie de Paris, 1879, p. 156.

*Puberty.*—We have collected the following statistics of the beginning of menstruation:

TABLE XIII.—*Beginning of menstruation.*

Age.	St. Petersburg (Weber). <sup>a</sup>	America (Roberts). <sup>b</sup>	America (Starbuck). <sup>c</sup>	London. <sup>d</sup>	London. <sup>d</sup>	Paris. <sup>d</sup>	Italy, country (Roberts). <sup>b</sup>	Italy, country (Roberts). <sup>b</sup>
5						1		
6						1		
7						2		
8				1		2		
9			1	4	14	10		
10	10	1	1	5	55	29	1	
11	70	5	7	53	67	93	2	
12	171	9	9	90	123	105	8	
13	415	18	27	183	210	132	14	
14	556	25	39	266	311	104	17	
15	453	20	22	291	320	190	19	
16	848	14	6	234	264	141	17	
17	200	3	5	181	158	127	10	
18	77	3	2	105	112	90	8	
19	40	1		45	42	35	2	
20	16	1		26	29	30	2	
21	8			8	9	8		
22	5			3	4	8		
23				2	1	5		
24	2							
25				1				
	15.1±1.87	14.7±1.73	14.8±1.56	15.6±2.1	14.8±2.2	15.8±2.7	15.5±2.0	14

<sup>a</sup> Ploss. Das Weib, 1899, I, p. 327.

<sup>b</sup> The Lancet, July 25, 1885.

<sup>c</sup> Psychology of Religion, p. 40.

<sup>d</sup> Journal of Medical Science, Edinburgh, 1850, Vol. XI, pp. 289-296.

*Menopause.*—Weber <sup>a</sup> gives the following statistics for St. Petersburg; the percentile frequency of the occurrence of the menopause, the total number of his observations being 578.

TABLE XIV.—*Occurrence of menopause.*

Years.	Per cent.
30-35	
35-40	
40-45	
45-50	
50-55	

Average, 44.5±5.3 years.

*Deaths due to arterial diseases.*—Finally, we have tried to calculate the ability of the time of occurrence of deaths due to the phenomena of senility. The most available groups of deaths seemed to be those due to arterial diseases. Doctor Wissler has made an approximate calculation of the distribution of deaths due to arterial diseases in Paris, the method and calculation being attributed by him. He summarizes his results as follows:

The statistics of Paris for 1896 give the number of deaths from arterial diseases; <sup>b</sup> but the values must be reduced to the frequencies of deaths for a number of individuals. For example, the number of males dying of this class

<sup>a</sup> See Ploss. Das Weib, 1899, I, p. 578.

<sup>b</sup> Annuaire Statistique de la Ville de Paris, XVII<sup>e</sup> Anné, 1896.

diseases at the age from 45 to 49 is 15; the total number of deaths of males from all causes for the same ages, 1,763, and the total number of living males, 80,952. For the succeeding years of life the corresponding numbers will be taken from a different group of individuals and can not be compared to the foregoing until both are reduced to the same base. Hence, a table of the frequencies of death at the successive ages must be based upon the life history of a definite number of individuals. If we begin with 1,000 individuals born at the same time and record the deaths from year to year until all are dead, we obtain a series of numbers expressing the relative age frequencies of death. Statistics of this sort are obviously difficult to obtain, and it is customary to calculate their values from the death rates of successive ages. The French mortality tables used in life insurance give the probable number of deaths during each five years of life. These are calculated from the formula

$$l_2 = l_1 - 5d \frac{l_1 + l_2}{2},$$

in which  $l_1$  = the number living;  $d$ , the annual death rate for the period;  $l_2$ , the number of survivors at the end of the period.<sup>a</sup>

According to this method the total mortality table for males in Paris in 1896 was calculated, beginning with 1,000 individuals 10 years of age. In the following table the first column gives the number of survivors for the successive age periods and the second column the number of deaths. Since in the vital statistics of Paris all over 80 years of age are grouped together, it was necessary to make an approximate distribution for these ages based upon the general mortality tables for France. The ratio of the number of deaths due to affections of the arteries to the total number of deaths for each age period enables us to calculate the relative number of deaths from these diseases annually for over 1,000 males. These values are given in the third column of our table:

TABLE XV.—Mortality table for arterial diseases.

Age.	Survivals.	Total deaths.	Deaths from arterial diseases.
10.....	1,000	-----	-----
10-14.....	997	3	-----
15-19.....	965	32	0.05
20-24.....	924	41	.13
25-29.....	888	36	.00
30-34.....	838	50	.10
35-39.....	778	60	.14
40-44.....	712	66	.30
45-49.....	641	71	.61
50-54.....	562	79	.60
55-59.....	464	96	.87
60-64.....	363	101	1.13
65-69.....	262	101	1.44
70-74.....	167	95	1.28
75-79.....	79	88	.60
80-84.....	41	38	.35
85-89.....	8	33	.80
90-94.....	1	7	.08
95-99.....	0	1	.01

Average,  $62.55 \pm 13.2$ .

In his discussion of the chances of death,<sup>a</sup> Karl Pearson has dissected the general mortality curve into five component elements, giving probabilities of

<sup>a</sup>E. Dormoy: *Théorie Mathématique des Assurances sur la Vie*.

<sup>b</sup>The Chances of Death, I, p. 26.

death for infancy, childhood, youth, middle life, and old age. He gives the following variabilities for the time of death:

Infancy .....	±
Childhood .....	±
Youth .....	±
Middle life .....	± 1
Old age .....	± 1

The last of these agrees well with the results obtained from Doctor Wis discussion of deaths due to arterial diseases.

From the material that has been given the following results for the abilities of development in various periods of life have been obtained.

TABLE XVI.—Variabilities of age.

Age (years).	Observation.	V bi
0.....	Pregnancy .....	
0.6.....	First incisors .....	
1.6.....	First molars .....	
7.....	Inner permanent incisors, girls .....	
7.5.....	Inner permanent incisors, boys .....	
8.9.....	Outer permanent incisors, girls .....	
9.....	Bicuspsids, girls .....	
9.5.....	Outer permanent incisors, boys .....	
9.8.....	Bicuspsids, boys .....	
11.2.....	Permanent canines, boys .....	
11.3.....	Permanent canines, girls .....	
12.8.....	Second molars, girls .....	
13.2.....	Second molars, boys .....	
14.9.....	Puberty, girls .....	
19.3.....	Wisdom teeth, boys .....	
22.....	Wisdom teeth, girls .....	
44.5.....	Menopause .....	
62.5.....	Death due to arterial diseases, men .....	

From these data it appears clearly that there is an increase in variabil of the time at which certain stages of development are reached. In our s a variety of physiological phenomena have been considered and all give si results. It must, of course, not be supposed that all the different phenom must necessarily give the same results, since each of them must be affecte certain peculiar conditions aside from the general variability of development is characteristic of the whole series. It does not appear clearly from the s able material whether there is a difference in this respect between the two s

It is interesting to see that a similar increase in variability takes pla the grouping of children according to mental maturity. This may be obs in the arrangement of children of the same age in different grades in sc In Worcester, for instance, the following distribution was observed.

TABLE XVII.—Distribution of girls of various ages in school.

Age.	Grade.									Total num- ber.	Average grade.
	1.	2.	3.	4.	5.	6.	7.	8.	9.		
9.....	4	26	51	66	5					152	3.8
10.....		7	28	77	60	20				192	4.8
11.....		3	19	53	78	53	12	1		219	5.4
12.....			5	31	47	79	43	23	6	224	6.4
13.....			1	10	26	50	47	39	18	186	7.1

It is not surprising to find that these variabilities are less than those obtained from physiological data, since the grading in schools involves not only phenomena of acceleration and retardation, but also a selective grouping.

The peculiar distribution of measurements of children of the same age, but in different grades, to which Porter first called attention, are of such a character that the children who are retarded in grade are also retarded in *all* their physical measurements. They are not simply short or light-weight children of their particular age, but all their measurements correspond to those of younger children, while the measurements of children who are ahead of their age correspond to measurements of older children. The same phenomena are brought out by our Worcester series.

TABLE XVIII.—*Statures of girls of the same ages in different grades.*

Age.	Grades.							
	1.	2.	3.	4.	5.	6.	7.	8.
7	1,139±51 <sub>48</sub>	1,187±42 <sub>58</sub>	1,191±47 <sub>17</sub>					
8	1,182±50 <sub>16</sub>	1,209±47 <sub>57</sub>	1,229±53 <sub>50</sub>	1,273±56 <sub>20</sub>				
9		1,247±52 <sub>36</sub>	1,263±58 <sub>51</sub>	1,282±47 <sub>66</sub>				
10			1,308±56 <sub>23</sub>	1,340±61 <sub>77</sub>	1,347±68 <sub>60</sub>	1,364±60 <sub>20</sub>		
11			1,336±43 <sub>19</sub>	1,360±61 <sub>53</sub>	1,376±69 <sub>78</sub>	1,390±65 <sub>53</sub>	1,409±70 <sub>15</sub>	
12				1,420±59 <sub>51</sub>	1,445±71 <sub>47</sub>	1,433±66 <sub>79</sub>	1,459±74 <sub>43</sub>	1,486±48 <sub>25</sub>
13					1,478±72 <sub>26</sub>	1,487±63 <sub>50</sub>	1,490±55 <sub>47</sub>	1,533±63 <sub>39</sub>

It will be seen from Table XVII that the correlation between age and grade is very close. Table XVIII gives the following average ages and average variabilities of stature for each grade:

	Grades.							
	1.	2.	3.	4.	5.	6.	7.	8.
Age.....	7.7	8.3	9.4	10.5	11.7	12.3	12.8	13.6
Variability of stature.....	±51	±47	±51	±57	±68	±63	±66	±58

In this series the variabilities increase on the whole in the same manner as in the general Table Ib. This correspondence becomes still clearer when we consider each measurement as corresponding to the age to which it would belong according to Table Ib. If we interpolate in Table Ib for 1139 for stature, we find the age of 6.9 years as corresponding to the average stature. Thus we can substitute for Table XVIII the following table of ages:

Age.	Grades.							
	1.	2.	3.	4.	5.	6.	7.	8.
7	6.9	7.8	7.9					
8	7.7	8.3	8.9	9.5				
9		9.0	9.4	9.7				
10		9.9	10.1	10.7	10.9	11.3		
11			10.6	11.2	11.5	11.7	12.0	
12				12.2	12.5	12.4	12.8	13.3
13					13.1	13.3	13.3	14.4



If we arrange the variabilities for the grades and ages in accordance with this table of ages corresponding to statures, and smooth the series, which seems necessary on account of the small number of observations, we find:

Age.	Variability.	Smoothed.	Average per year.	Variabilities of girls (Table Ib).	Variabilities of American girls. <sup>a</sup>
6.9.....	51				
7.7.....	50	48			
7.8.....	42	46	49	56	52
7.9.....	47	45			
8.3.....	47	49	50	58	56
8.9.....	53	51			
9.0.....	52	54			
9.4.....	58	55	53	54	57
9.5.....	56	52			
9.7.....	47	52			
9.9.....	54	52			
10.1.....	56	51			
10.6.....	43	53	57	65	62
10.7.....	61	57			
10.9.....	68	63			
11.2.....	61	63	62	64	68
11.3.....	60	61			
11.5.....	63	63			
11.7.....	65	66			
12.0.....	70	65			
12.2.....	59	65	68	72	76
12.4.....	66	65			
12.5.....	71	70			
12.8.....	74	72			
13.1.....	72	65	62	69	74
13.3.....	48	61			
13.8.....	63	55			
13.8.....	65	62			
14.4.....	68				

<sup>a</sup> See F. Boas, "Growth of Toronto children," Rep. Com. of Education, 1896-97, p. 1556.

Thus it appears that the position of a child in the grades conforms in regard to its measurements and variabilities strictly to the values which would result if its age were considered as variable, so that we find in these observations a good confirmation of our general theory. It would be interesting to know whether the physiological data discussed before have a similar relation to the measurement of the body, as we found in the mental variations. Unfortunately no material bearing upon this point is available.

The data collected in Table XVI can be expressed approximately by the formula—

$$\sigma_t = 0.23t - 0.06t^2, \text{ which can be used for } t < 20 \text{ years.}$$

This formula gives us the following variabilities:

TABLE XIXa.

Age.	$\sigma_t$	Age.	$\sigma_t$	Age.	$\sigma_t$
5.....	1.00	11.....	1.81	17.....	2.18
6.....	1.16	12.....	1.90	18.....	2.20
7.....	1.32	13.....	1.98	19.....	2.20
8.....	1.46	14.....	2.04	20.....	2.20
9.....	1.56	15.....	2.10		
10.....	1.70	16.....	2.14		

We may also determine a maximum value for this variability from our table of growth. If the variability of stature during the period of growth were due entirely to acceleration and retardation—an assumption which can be

even approximately correct only during the early years of childhood—we may use our formula on page 26.

$$\mu_1^2 = d_1^2 \sigma_1^2 + \sigma_1^2$$

In accordance with the present assumption,  $\sigma_1$  would disappear, and we have

$$\mu_1 = d_1 \sigma_1$$

We have used the tables published in F. Boas's paper on the "Growth of Toronto children,"<sup>a</sup> which have been smoothed graphically (figs. 2 and 3, p. 48) and which may be summarized in the following table:

TABLE XIXb.

Age interval.	Boys.			Girls.		
	Increment of stature.	Variation.	$\sigma_1$ .	Increment of stature.	Variation.	$\sigma_1$ .
5-6	56	+44	$\pm 0.8$	57	$\pm 46$	$\pm 0.8$
6-7	53	$\pm 47$	$\pm .9$	54	$\pm 48$	$\pm .9$
7-8	50	$\pm 50$	$\pm 1.0$	52	$\pm 50$	$\pm 1.0$
8-9	48	$\pm 53$	$\pm 1.1$	49	$\pm 55$	$\pm 1.1$
9-10	46	$\pm 55$	$\pm 1.2$	50	$\pm 55$	$\pm 1.2$
10-11	44	$\pm 57$	$\pm 1.3$	53	$\pm 60$	$\pm 1.2$
11-12	45	$\pm 62$	$\pm 1.4$	59	$\pm 66$	$\pm 1.2$
12-13	53	$\pm 66$	$\pm 1.3$	62	$\pm 74$	$\pm 1.2$
13-14	64	$\pm 75$	-----	48	$\pm 72$	$\pm 1.4$
14-15	73	$\pm 85$	-----	80	$\pm 66$	-----
15-16	54	$\pm 86$	-----	15	$\pm 59$	-----
16-17	37	$\pm 76$	-----	8	$\pm 59$	-----
17-18	24	$\pm 71$	-----	4	$\pm 53$	-----
18-19	14	$\pm 66$	-----	1	$\pm 56$	-----
19-20	7	$\pm 63$	-----	-----	-----	-----
20-21	3	$\pm 66$	-----	-----	-----	-----
21-22	1	$\pm 66$	-----	-----	-----	-----

A comparison between Tables XIXa and XIXb shows a fair close correspondence, and suggests that, for stature at least, the variabilities obtained from observations on dentition and puberty give too high results. This may be seen also from a consideration of the physical development of children of 15 years, for instance. If the variability were as high as 2.1, as indicated by the data on dentition, there would be an appreciable number of individuals whose development would correspond to the stages of 10 and 20 years, which is obviously not true. Similar maximum values may be derived from Table III by disregarding for the early years of childhood the value of  $r\sigma_1\sigma_2$  of equation (1) on page 26. Then we have—

$$R\mu_1\mu = d_1d_2\sigma_1.$$

Thus we find the following values for  $\sigma_1$ :

Age.	Boys.				Girls.			
	Derived from—			Average.	Derived from—			Average.
	Stat- ure— Weight.	Stat- ure— Height sitting.	Weight— Height sitting.		Stat- ure— Weight.	Stat- ure— Height sitting.	Weight— Height sitting.	
6	1.4	1.4	1.6	1.5	0.7	0.7	0.9	0.8
7	1.1	1.1	1.4	1.2	1.3	1.2	1.4	1.3
8	1.0	1.1	1.8	1.3	1.2	1.5	1.2	1.3
9	1.0	1.1	1.2	1.1	1.1	1.0	1.3	1.1
10	1.4	1.5	1.7	1.5	1.9	1.6	2.0	1.8
11	1.6	2.2	2.5	2.0	1.2	1.3	1.4	1.3
12	1.6	1.8	2.1	1.8	1.1	1.0	1.3	1.2
13	1.5	1.6	1.7	1.6	1.5	1.6	1.6	1.6

<sup>a</sup> L. c., pp. 1555, 1556.

The irregularity of distribution in this table is not surprising, since the series from which the values were obtained is very brief.

We infer from all this that the variability must be assumed as lower than the one obtained from dentition. Although the amount of this variability is uncertain, it seems worth while to calculate its approximate effect upon the course of growth. If the number of retarded individuals is designated by  $n_t$  and the stature for each period by  $s_t$ , we have for  $s'_t$ , or the average observed stature at the period  $t$

$$s'_t = \frac{1}{n} \sum n_t s_t = s'_t + \sum n_t (s_t - s'_t)$$

The values of  $n_t$  may be taken from the probability integral.  
For  $\sigma_t = \pm 1.5$  we obtain the following values for  $s_t$ :

$$s_t = s'_t +$$

Age.	Boys.	Girls.	Age.	Boys.	Girls.
11.....	- 9	+ 3	17.....	+19	+6
12.....	-13	+19	18.....	+14	+3
13.....	- 3	+27	19.....	+ 9	
14.....	+20	+25	20.....	+ 5	
15.....	+26	+16	21.....	+ 2	
16.....	+24	+10			

Thus we obtain for the probable values for typical statures:

TABLE XX.

Age.	Boys.			Girls.		
	Typical stature.	Incre- ment.	Ob- served average.	Typical stature.	Incre- ment.	Ob- served average.
11.....	1,351	-----	1,360	1,369	-----	1,365
12.....	1,382	41	1,405	1,444	75	1,427
13.....	1,455	63	1,458	1,514	70	1,485
14.....	1,542	87	1,522	1,560	46	1,535
15.....	1,621	79	1,595	1,581	21	1,565
16.....	1,673	52	1,649	1,590	9	1,580
17.....	1,705	32	1,686	1,584	4	1,568
18.....	1,724	19	1,710	1,595	1	1,592
19.....	1,733	9	1,724	1,595	-----	1,595
20.....	1,736	3	1,731	-----	-----	-----
21.....	1,736	-----	1,734	-----	-----	-----

The theory of the variability of period of development explains a number of peculiarities of growth. It is evident that children of accelerated development, at the beginning of the period of rapid increase in the rate of growth, must show for several years high rates of growth, while the retarded children, who have not reached the period of acceleration, must show low rates of growth. In other words, there must be a strong positive coefficient of correlation between stature and rate of growth, and also between the rate of growth of one year and that of the next year. Later on, when growth is nearly completed, those who are in advance will have nearly completed their growth, while those who are retarded and therefore short will continue to grow rapidly. In other words, the period of a high positive correlation must be followed by one of negative correlation. The existence of such correlation was pointed out by F. Boas in his report on

the "Growth of Toronto children"<sup>a</sup> and, later on, by Clark Wissler.<sup>b</sup> In the following tables we give the data on these correlations calculated in accordance with Pearson's methods. The calculations were made by Mr. William S. Kahnweiler and revised by Dr. Wissler. We designate, as before, by  $s_t$  the measurement at the period  $t$ ; by  $\sigma_t$  its variability; by  $d_t$  the increment during the interval  $t$  and  $t+1$ ; by  $\sigma_d$  the variability of the increment; by  $r_t$  the coefficient of correlation between  $s_t$  and  $d_t$ ; and by  $n$  the number of cases.

TABLE XXI.—Correlations of measurements and their increments.

## STATURE.

Age.	Boys.						Girls.					
	$s_t$	$\sigma_t$	$d_t$	$\sigma_d$	$r_t$	$n$	$s_t$	$\sigma_t$	$d_t$	$\sigma_d$	$r_t$	$n$
5							1,071	± 46	58	± 8	+0.15	16
6	1,127	± 48	57	± 6	+0.25	42	1,114	± 45	59	± 9	+ .44	39
7	1,155	± 44	53	± 9	+ .11	82	1,177	± 53	55	± 11	+ .14	46
8	1,232	± 45	49	± 9	+ .08	64	1,214	± 45	55	± 9	+ .24	53
9	1,274	± 55	51	± 10	+ .25	79	1,279	± 57	59	± 12	+ .47	51
10	1,322	± 61	50	± 9	+ .18	73	1,318	± 64	62	± 17	+ .18	76
11	1,368	± 64	47	± 12	+ .18	71	1,367	± 61	72	± 22	+ .18	83
12	1,427	± 64	59	± 18	+ .48	77	1,446	± 73	65	± 20	+ .42	69
13	1,473	± 68	75	± 24	+ .39	63	1,497	± 65	54	± 27	+ .39	49
14	1,550	± 95	62	± 30	+ .42	32	1,538	± 77	33	± 25	+ .63	35
15	1,622	± 94	52	± 33	+ .44	17	1,672	± 42	17	± 11	+ .11	16

## HEIGHT SITTING.

5							589	± 24	25	± 17	-0.60	17
6	618	± 28	25	± 15	-0.31	42	618	± 20	24	± 18	- .32	39
7	639	± 29	19	± 12	- .25	64	638	± 24	29	± 16	- .15	44
8	690	± 27	21	± 17	- .07	66	656	± 24	22	± 19	- .16	53
9	684	± 29	24	± 14	- .12	78	683	± 29	27	± 14	- .02	52
10	712	± 27	25	± 12	- .05	73	699	± 33	32	± 17	+ .01	76
11	719	± 32	24	± 15	- .17	70	724	± 35	37	± 19	- .15	83
12	744	± 33	36	± 19	+ .22	76	757	± 34	42	± 14	- .16	69
13	795	± 31	46	± 16	+ .04	62	786	± 36	40	± 20	- .42	49
14	804	± 50	44	± 16	- .41	32	803	± 51	31	± 19	- .43	35
15	830	± 30	42	± 24	- .05	17	829	± 21	20	± 16	- .03	16

## WEIGHT.

5							40.1	± 4.4	4.5	± 1.0	+0.54	17
6	45.9	± 4.1	4.9	± 1.8	+0.56	41	43.6	± 4.2	4.2	± 2.4	+ .11	39
7	48.1	± 5.2	4.8	± 1.7	+ .11	63	48.2	± 6.7	5.0	± 3.3	+ .45	46
8	54.3	± 6.2	5.1	± 1.9	+ .48	66	51.5	± 5.4	6.1	± 4.3	+ .32	53
9	59.9	± 7.9	5.4	± 2.3	+ .12	76	59.4	± 9.4	7.1	± 4.9	+ .35	50
10	66.5	± 7.2	5.5	± 3.0	+ .77	70	62.9	± 10.7	8.0	± 4.8	+ .29	76
11	72.4	± 10.0	6.4	± 3.5	+ .56	70	69.0	± 12.0	10.0	± 4.9	+ .44	83
12	79.1	± 12.3	7.8	± 4.3	+ .72	76	78.5	± 12.8	10.5	± 4.4	+ .38	69
13	88.0	± 12.8	11.6	± 5.5	+ .22	63	90.7	± 13.8	10.9	± 4.8	+ .15	48
14	100.6	± 22.5	12.9	± 6.3	- .37	32	97.5	± 17.5	7.7	± 5.3	- .15	35
15	106.5	± 19.8	10.3	± 5.8	- .25	17	108.0	± 12.0	3.9	± 3.5	- .11	16

This table shows the expected results, a maximum of positive correlations during the periods of most rapid growth and a sudden drop to negative correlations when growth is nearly completed.

It is very peculiar that for height sitting the correlations are throughout negative. They move in approximately the same manner as those for stature and weight, but they remain negative. Since this measurement is very inaccurate, it seems desirable to investigate the influence of the error of observation.

<sup>a</sup> L. c., pp. 1550 ff.

<sup>b</sup> American Anthropologist, new series, V, pp. 81 ff.

If we call  $x$  the variation at the age  $t$ ,  $z$  the variation of the increment, and  $y$  and  $y'$  the errors of observation, we have—

$$\begin{aligned} s'_t &= s_t + x + y. \\ s'_{t+1} &= s_t + d + x + z + y'. \\ \text{Therefore } d' &= d + z + y' - y. \\ \sigma'^2_d &= \sigma^2_d + 2\varepsilon^2, \text{ when } \varepsilon \text{ the standard error of observation.} \\ \sigma'^2_t &= \sigma^2_t + \varepsilon^2. \\ r' &= \frac{[(x+y)(z+y'-y)]}{\sigma'_t \sigma'_d} = \frac{[xz] - \varepsilon^2}{\sigma'_t \sigma'_d}. \\ r &= r' \frac{\sigma'_t \sigma'_d}{\sigma_t \sigma_d} + \frac{\varepsilon^2}{\sigma_t \sigma_d}. \end{aligned}$$

In order to determine the value of  $\varepsilon$ , we have collected a series of measurements of children in the Horace Mann School. We took two independent measurements of the height sitting of each of 53 children, the method being intentionally inaccurate, because it seemed important to obtain a maximum value of  $\varepsilon$ . The differences between the pairs of measurements gave the error of  $2\varepsilon^2$ , which was found to be 65.4, and from this the value of  $\varepsilon$  was determined as  $\pm 5.7$ .

In this manner we find for the corrected coefficients of correlation for height sitting and its increments the following values:

Age.	Boys.	Girls.	Age.	Boys.	Girls.
5.....		-0.57	11.....	-0.12	-0.11
6.....	-0.29	-.28	12.....	+ .30	-.07
7.....	-.20	-.08	13.....	+ .12	-.41
8.....	+ .03	-.10	14.....	-.40	-.43
9.....	-.05	+ .08	15.....	-.01	+ .06
10.....	+ .07	+ .07			

Thus it appears that the negative character of these coefficients is not due to the errors of observation, but that there is almost throughout a tendency for long trunks to grow slowly.

Finally, we will give a table of correlations of annual increments of stature and weight, based on a series of observations which were kindly placed at our disposal by Dr. Wilson Farrand, principal of the Newark Academy, Newark, N. J., in which school the measurements were collected in the course of the last ten years. We have the records of 70 boys whose measurements were taken annually between the ages of 12 and 17 years. The calculation of the correlations between the increments of one annual interval with those of other annual intervals results in the following table: <sup>a</sup>

TABLE XXII.—Correlations of annual increments of boys.  
STATURE.

Ages.	12-13.	13-14.	14-15.	15-16.	16-17.
12-13.....	+1.00	+0.45	-0.02	-0.62	-0.70
13-14.....	+ .45	+1.00	-.04	-.56	-.66
14-15.....	-.02	-.04	+1.00	+ .43	-.03
15-16.....	-.62	-.56	+ .43	+1.00	+ .61
16-17.....	-.70	-.66	-.03	+ .61	+1.00

<sup>a</sup> See Clark Wissler, "The growth of boys." Amer. Anthropologist, N. S., Vol. V., pp. 84, 85.

TABLE XXII.—Correlations of annual increments of boys—Continued.

## WEIGHT.

Ages.	12-13.	13-14.	14-15.	15-16.	16-17.
12-13.....	+1.00	+0.89	-0.05	-0.43	-0.41
13-14.....	+ .39	+1.00	+ .09	- .36	- .31
14-15.....	- .05	+ .09	+1.00	+ .03	+ .01
15-16.....	- .43	- .36	+ .03	+1.00	+ .53
16-17.....	- .41	- .31	+ .01	+ .36	+1.00

It appears here clearly that the interval 14-15 years forms the dividing line between positive and negative correlations, so that at that age boys grow independently of the rate of growth of other years, while boys who grow rapidly before that time grow slightly later on, while those who grow slowly before that time grow rapidly later on.

We have in the preceeding discussions considered from a number of points of view the theory that the peculiarities of growth are due to phenomena of varying rapidity of development, and we have found that all the observed facts may be adequately explained by this theory; that it conforms with the general variability in the rapidity of physiological development, which we developed from observations on gestation, dentition, puberty, senility, and mental achievement. From the data thus obtained we have determined a new curve of growth (Table XX), which gives us with the greatest approximation now attainable the typical—not the average—statures for each age.

It seems important to investigate in how far the differences in the development of various social groups are due to typical differences, and in how far they may be considered as effects of acceleration and retardation. The gradual increase in the variability of growing individuals up to the prepubertal period and its subsequent decrease, together with our proof that these phenomena may be adequately explained as phenomena of acceleration and retardation, show that retardation of development is partly made good by a longer continuation of growth, but that a complete recovery does not take place. Otherwise, the decrease of variability would be much more than what it actually is. It is true that the absolute amount of recovery can not be stated at the present time. In order to be able to do so, we require a series in which the final development of children retarded in early years would be shown. Doctor Wissler's table (see above, Table XXII) shows, however, clearly that compensation takes place in periods as far apart as four years. It seems safe to conclude that if the variabilities of various social groups should follow the same laws as those of individuals, that then their course may also be explained as due to retardation and acceleration.

In order to investigate this question, we can utilize the available observations of social groups. The typical stature of any social group may be said to be equal to the average stature of the whole people plus a certain deviation, which, in the great variety of existing social groups, follows the laws of chance, and which may be measured by the standard variability  $\varepsilon$ . An observed value, obtained from a series of  $n$  observations of a certain social group, will, furthermore, have an uncertainty measured by  $\sqrt{\frac{\sigma^2}{n}}$ . Therefore its deviation from the type will be

measured by  $\sqrt{\varepsilon^2 + \frac{\sigma^2}{n}}$ . Provided that  $\varepsilon$  is sufficiently large, so that  $\frac{\sigma^2}{n}$  may be disregarded in comparison to it, its value can be determined as the standard

deviation of the whole series of social groups that have been studied. We have carried out this calculation for the following groups, wherever the number of available cases was sufficiently large: Worcester, Mass.; Milwaukee (Perkham), with subdivisions of German-born children and those of all nationalities; Chicago (Smedley); Oakland, Cal.; Toronto, Ontario, with subdivisions according to the order of birth; Boston (Bowditch), with subdivisions of American nonlaboring class, American laboring class, and Irish laboring class. It did not seem advisable to include in this tentative investigation foreign countries, because the number of available classes is small and the differences between the statures of children in America and foreign countries are greater than in the groups here considered.

Following is the result of our calculation:

TABLE XXIII.—*Variabilities of social groups.*

Age.	Boys.		Girls.	
	Number of groups.	Variability.	Variability.	Number of groups.
6	9	Mm. 11		
7	9	10	7	12
8	10	11	11	13
9	10	9	10	13
10	10	9	10	12
11	10	11	9	13
12	9	14	15	13
13	8	16	16	11
14	7	26	14	10
15	7	25	13	10
16	5	5	13	10

We think that, notwithstanding the small number of cases, this table shows that in boys the variabilities of social groups increase up to the fourteenth or fifteenth year, while in girls the increase, which lasts until the thirteenth year, is followed by a decrease. That is to say, the development here follows the general law of development of the individual. The groups which live under less favorable conditions develop slowly, but have a longer period of growth, without, however, being able to make up for the early losses by the longer period.

In the following tables we have collected the material on which our discussions are based. The publication of our observations in extenso seems justifiable, since the theory of growth requires further elaboration in many directions. For students of these subjects material will be indispensable, and a series of observations collected with considerable care and embodying many data will obviate the necessity of beginning every new study with the collection of new material.

The data were collected in Worcester, Mass., in the years 1891 and 1892. Most of the measurements were made in the public schools and high schools, and comparatively few only in private schools. The measurements were taken by F. Boas and by a number of students in the anthropological and psychological departments of Clark University. A preliminary discussion of the material was published by G. M. West.<sup>a</sup> In the following tables the age is given in years and months. The column "child" indicates the order of birth. All measurements of length are given in millimeters; weights in pounds avoirdupois. Weight was taken with clothing, but without shoes. Stature was measured standing free, by means of a rod with sliding arm; height sitting was taken

<sup>a</sup> Archiv für Anthropolog., 1893, p. 13 et seq.



on a level seat, whenever possible the knees above the level of the seat; length of head is the maximum length; breadth the maximum breadth; breadth of

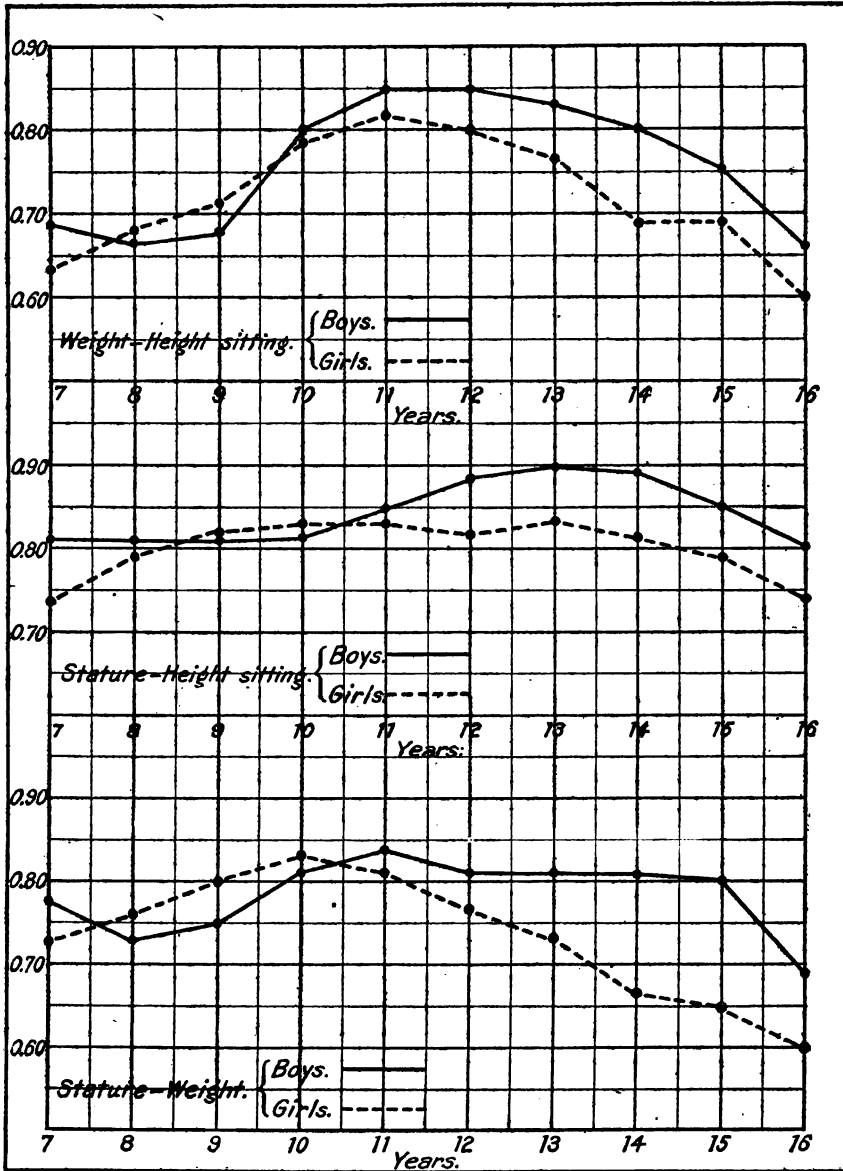


FIG. 1.—Correlations during the period of growth.

face the bizygomatic breadth. All of them were taken with pointed callipers. Height of face (1) and (2) are respectively the distances from naŕson and hairline to the chin. Length of forearm is the distance from the olecranon to

the tip of the middle finger. Breadth of hand is measured from first to fourth finger across the knuckles, the hand being held flat. Colors of hair are given

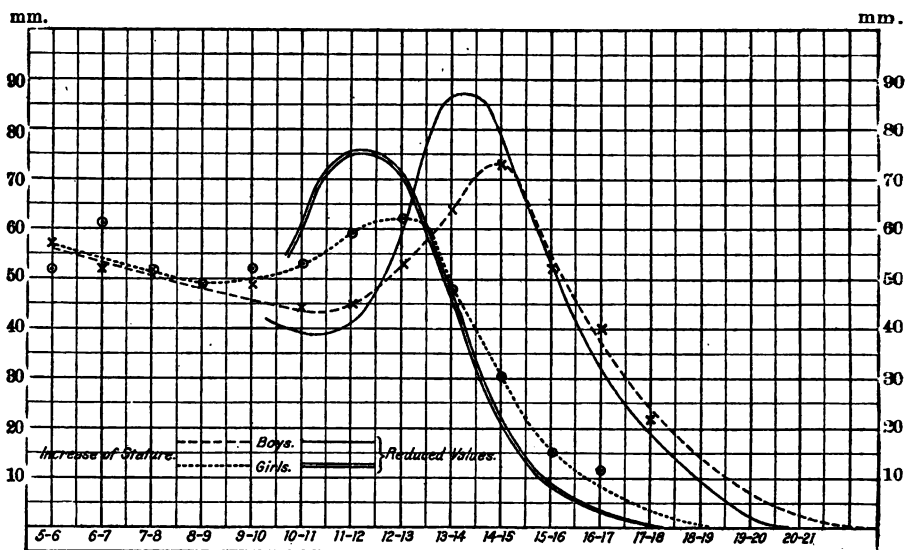


FIG. 2.—Typical increases of statures.

as black (bla.), dark brown (d. br.), brown (br.), light brown (l. br.), blonde (blo.), red. Colors of the eyes as dark brown (d. br.), brown (br.), light brown

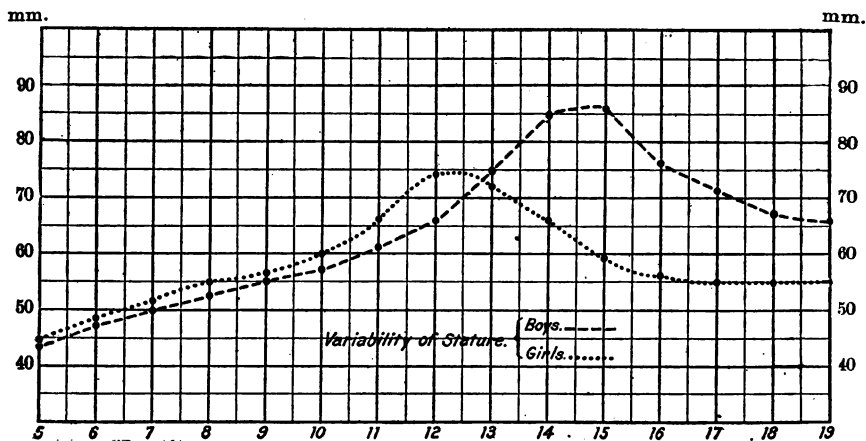


FIG. 3.—Variability of stature.

(l. br.), gray (gr.), gray blue (g. bl.), blue (bl.). The series of repeated measurements were taken after an interval of approximately one year.

## STATISTICS OF GROWTH.

49

5-year-old boys. Worcester, Mass.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
1	5.8	1	3	1.073	612	175	136	108	42	blo.	bl.	1	1
2	5.11	1	1	1.058	649	177	145	117	51	blo.	bl.		
3	5.3	1	4	1.063	593	171	139	115	41	d. br.	d. br.	2	2
4	5.9	2	2	1.008	650	175	138	115	52	d. br.	br.		1
5	5.10	1	6	1.128	623	183	138	105	47	blo.	bl.	3	2
6	5.10	1		1.141	622	179	144	113	43	blo.	l. br.		
7	5.5	1	4	1.031	586	172	142	114	32	d. br.	l. br.	3	1
8	5.9	1		1.065	595	162	141	113	38	blo.	bl.		
9	5.8	1		1.150	627	188	147	117	43	l. br.	bl.		
10	5.9	1		1.114	624	185	140	113	43	br.	bl.		
11	5.11	1	2	1.155	648	176	149	117	48	r. br.	bl.	1	
12	5.7	1	8	1.067	657	184	153	118	57	br.	bl.	4	4
13	5.2	1	5	1.029	596	177	137	106	39	blo.	br.	2	3
14	5.1	1	2	1.061	553	175	136	108	35	blo.	g. bl.	2	
15	5.11	1	3	1.076	597	173	139	109	41	d. br.	bl.	1	1
16	5.5	1	1	1.108	616	177	136	112	43	d. br.	bl.	1	
17	5.2	1	4	1.084	601	173	149	116	42	br.	g. bl.	3	1
18	5.4	1	4	1.108	614	171	138	113	40	l. br.	g. bl.	1	2
19	5.8	1	3	1.051	574	173	137	108	38	br.	d. br.	1	3
20	5.3	1	6	1.048	570	182	145	143	39	blo.	bl.	2	2
21	5.6	1	1	1.062	596	173	143	115	41	br.	bl.		
22	5.5	1		1.100	616	179	132	114	48	blo.	g. bl.	2	1
23	5.10	1	5	1.082	590	183	144	113	39	d. br.	bl.	2	2
24	5.10	1	6	1.089	604	176	135	106	45	blo.		2	4
25	5.4	1	2	1.002	596	172	139	117	41	blo.	g. bl.	3	1
26	5.11	1	3	1.075	581	169	136	119	44	br.	gr.	1	1
27	5.8	1	1	1.089	563	182	139	118	46	d. blo.	gr.		1
28	5.11	1	1	1.041	583	177	142	116	40	d. br.	d. br.	1	1
29	5.10	1	6	1.091		174	134	117		l. br.	g. bl.	3	5
30	5.4	1	3	1.087		174	148	115		l. br.	gr.	3	1
31	5.6	1	2	1.056		174	138	112		d. blo.	g. bl.	1	1
32	5.7	1	3	1.036		178	137	117		d. br.	bl.	1	2
33	5.5	1	1	1.047		180	134	113		blo.	d. br.		
34	5.2		1	1.082	610	184	150	120		d. br.	d. br.		
35	5.5		2	1.082	605	177	137	111		l. blo.	d. br.		1
36	5.7	1		1.084	600				45				
37	5.11	1	3	1.097	638	184	140	116	42	br.	bl.		2
38	5.11	1	1		609	179	139	110	46	bl.	gr.	1	

## ADDITIONAL MEASUREMENTS.

Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.	Forearm.	Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.	Forearm.
23	1.060	94				30		89	137	58	
23	1.067	96				31		88	134	52	
24	1.075	93				32		90	142	52	
25	1.142	93				33		97	134	60	
26	1.079	95				34	1.071		140	51	
27	1.065	97				35	1.101	87	141	56	
28	1.014	89				36				58	295
29		90	137	57							

## 6-year-old boys. Worcester, Mass.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
1.	6.0	-----	4	1,158	644	178	141	120	50	br.	g. bl.	-----	3
2.	6.4	-----	3	1,097	625	180	139	112	45	l. br.	d. br.	1	3
3.	6.6	-----	3	1,158	618	174	147	116	49	r. br.	d. br.	1	1
4.	6.4	1	1	1,136	605	169	146	120	45	br.	bl.	2	-----
5.	6.4	-----	3	1,103	632	180	154	118	47	d. br.	l. br.	1	1
6.	6.9	-----	3	1,189	661	196	149	118	50	blo.	g. bl.	-----	1
7.	6.10	-----	3	1,145	633	182	136	110	46	l. br.	bl.	2	2
8.	6.10	-----	3	1,190	649	170	137	111	41	blo.	l. br.	1	1
9.	6.10	-----	1	1,180	671	179	143	117	51	blo.	bl.	1	2
10.	6.4	-----	4	1,063	614	184	142	110	46	br.	l. br.	2	-----
11.	6.6	-----	3	1,178	647	182	138	114	48	blo.	br.	1	1
12.	6.8	-----	2	1,145	600	184	143	112	46	blo.	bl.	1	-----
13.	6.8	1	1	1,062	563	175	133	106	35	blo.	bl.	1	1
14.	6.10	1	1	1,271	664	177	147	119	58	d. blo.	bl.	1	2
15.	6.3	1	4	1,147	645	188	143	118	50	blo.	bl.	1	-----
16.	6.6	1	1	1,174	665	178	145	121	55	br.	bl.	-----	1
17.	6.10	1	2	1,163	637	179	135	114	51	d. blo.	bl.	-----	1
18.	6.4	1	3	1,138	621	187	149	122	49	blo.	bl.	4	1
19.	6.10	1	1	1,132	639	183	138	107	42	br.	bl.	-----	1
20.	6.3	2	1	1,158	660	200	143	119	53	br.	d. br.	1	-----
21.	6.8	1	4	1,123	645	185	140	114	43	br.	bl.	1	2
22.	6.6	1	4	1,090	607	175	139	116	42	blo.	bl.	2	2
23.	6.10	1	1	1,140	616	181	148	118	43	d. blo.	bl.	-----	-----
24.	6.6	1	6	1,098	565	181	144	115	44	d. blo.	bl.	1	4
25.	6.1	1	2	1,227	688	180	141	124	61	br.	g. bl.	-----	-----
26.	6.10	1	4	1,143	580	180	144	105	47	d. br.	br.	-----	4
27.	6.4	1	4	1,220	642	182	140	110	52	br.	bl.	2	1
28.	6.3	1	3	1,062	595	172	136	105	40	br.	bl.	2	2
29.	6.1	1	1	1,173	631	181	133	107	44	br.	gr.	-----	-----
30.	6.1	1	5	1,097	612	178	136	105	40	br.	d. br.	2	2
31.	6.10	1	1	1,134	618	177	145	113	45	br.	gr.	3	3
32.	6.8	1	3	1,046	581	170	132	105	34	br.	l. br.	1	1
33.	6.9	1	4	1,117	627	165	143	118	48	br.	l. br.	3	1
34.	6.6	1	1	1,070	585	185	142	113	43	br.	bl.	-----	-----
35.	6.1	1	2	1,092	597	172	136	114	48	br.	br.	3	1
36.	6.8	1	1	1,115	629	184	140	112	44	br.	bl.	-----	-----
37.	6.10	1	1	1,153	595	179	138	110	47	blo.	bl.	1	1
38.	6.6	1	2	1,105	625	175	135	111	41	d. br.	bl.	3	1
39.	6.9	3	2	1,274	684	179	136	121	63	blo.	br.	1	-----
40.	6.4	2	2	1,200	665	180	142	120	55	d. br.	br.	1	1
41.	6.8	2	4	1,044	586	185	149	113	40	br.	bl.	4	-----
42.	6.7	1	2	1,064	593	185	147	115	41	br.	br.	-----	1
43.	6.7	1	1	1,090	599	169	141	111	42	br.	br.	-----	-----
44.	6.6	1	4	1,063	620	179	142	119	41	l. br.	l. br.	2	1
45.	6.11	1	-----	1,093	607	171	133	108	39	-----	-----	-----	-----
46.	6.9	1	-----	1,224	667	196	159	122	55	br.	bl.	-----	-----
47.	6.8	1	-----	1,140	631	181	143	112	45	d. blo.	bl.	-----	-----
48.	6.4	1	1	1,138	601	184	137	119	45	blo.	bl.	-----	-----
49.	6.11	1	-----	1,098	600	175	144	112	43	r. br.	d. br.	-----	-----
50.	6.2	1	-----	1,077	582	175	141	117	42	br.	br.	-----	-----
51.	6.9	2	2	1,092	605	176	137	118	41	br.	d. br.	1	-----
52.	6.2	1	1	1,086	587	175	143	115	40	blo.	bl.	-----	-----
53.	6.7	1	3	1,084	619	176	143	116	44	d. br.	br.	2	2
54.	6.9	1	8	1,144	644	176	149	118	51	br.	br.	4	7
55.	6.1	1	2	1,136	633	173	135	112	42	br.	bl.	-----	1
56.	6.6	1	1	1,071	613	166	134	108	41	d. blo.	d. br.	-----	-----
57.	6.6	1	3	1,165	646	184	136	114	48	br.	br.	1	1
58.	6.0	1	3	1,190	658	181	143	115	50	l. br.	br.	2	1
59.	6.0	1	3	1,085	593	176	137	111	43	br.	bl.	2	1
60.	6.3	1	2	1,067	586	185	140	110	44	d. br.	d. br.	2	1
61.	6.1	1	8	1,062	604	179	141	110	39	d. br.	d. br.	6	2
62.	6.4	1	3	1,102	605	182	132	109	50	d. blo.	br.	2	1
63.	6.7	1	6	1,045	591	176	135	111	36	br.	br.	4	3
64.	6.4	1	3	1,066	597	165	139	108	38	d. br.	d. br.	1	1
65.	6.9	2	2	1,249	671	178	142	118	53	d. blo.	g. bl.	1	-----
66.	6.8	1	2	1,208	658	180	146	117	50	br.	br.	-----	1
67.	6.6	1	1	1,119	576	173	141	115	46	d. br.	g. bl.	1	-----
68.	6.9	1	1	1,172	634	191	141	115	49	br.	br.	-----	-----
69.	6.10	1	1	1,135	590	167	132	112	42	r. br.	br.	1	-----
70.	6.9	1	4	1,086	601	172	139	117	43	d. br.	d. br.	2	2
71.	6.11	1	4	1,038	610	172	146	116	42	d. br.	d. br.	2	2
72.	6.3	1	1	1,109	606	173	137	115	42	d. br.	bl.	-----	-----
73.	6.3	1	1	1,178	664	186	146	119	58	blo.	bl.	-----	-----
74.	6.10	1	2	1,229	661	180	141	119	52	l. br.	g. br.	-----	1
75.	6.5	1	4	1,211	663	178	139	117	50	br.	gr.	-----	8
76.	6.11	1	5	1,122	622	179	143	110	45	d. blo.	bl.	2	2
77.	6.2	1	2	1,075	609	173	139	110	41	d. br.	bl.	-----	1
78.	6.0	1	4	1,042	573	174	136	105	35	br.	bl.	2	1
79.	6.4	1	3	1,220	673	189	145	122	53	br.	d. br.	0	2

## STATISTICS OF GROWTH.

51

6-year-old boys. Worcester, Mass.—Continued.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
80.....	6.9	1	3	1,117	612	179	135	110	44	br.	br. bl.	2	1
81.....	6.5	1	7	1,065	608	172	137	109	38	br.	br.	2	1
82.....	6.6	1	1	1,247	685	178	139	119	52	r. br.	d. br. bl.	2	1
83.....	6.5	1	3	1,142	640	183	146	117	49	d. br.	d. br.	2	1
84.....	6.2	1	3	1,072	602	189	139	114	46	br.	d. br.	2	1
85.....	6.8	1	2	1,094	594	170	139	114	47	br.	d. br.	1	1
86.....	6.0	1	5	1,010	562	171	139	116	39	br.	bl.	4	1
87.....	6.10	1	8	1,205	671	183	140	114	57	br.	bl.	3	3
88.....	6.8	1	1	1,042	565	179	139	115	43	d. br.	d. br. bl.	1	1
89.....	6.9	1	1	1,125	612	176	140	111	48	l. br.	d. br.	1	1
90.....	6.3	1	2	1,184	649	184	140	107	54	l. br.	d. br.	1	1
91.....	6.11	1	6	1,088	581	167	141	111	47	l. br.	d. br.	4	1
92.....	6.8	1	3	1,089	598	171	141	112	41	l. br.	d. br.	3	3
93.....	6.0	1	1	1,146	652	175	140	111	47	blo.	d. br.	1	1
94.....	6.5	1	2	1,127	622	174	141	118	47	br.	bl.	2	2
95.....	6.10	1	4	1,105	625	171	138	112	41	br.	bl.	2	1
96.....	6.8	1	3	1,109	618	185	144	118	46	br.	bl.	2	1
97.....	6.2	1	1	1,161	.....	190	142	109	.....	d. br.	d. br.	1	1
98.....	6.7	1	1	1,154	.....	176	140	117	.....	blo.	d. br.	1	1
99.....	6.9	1	6	1,116	.....	180	141	120	.....	d. br.	d. br.	3	2
100.....	6.8	1	1	1,079	.....	168	139	111	.....	d. blo.	d. br.	1	1
101.....	6.5	1	1	1,103	.....	182	132	111	.....	d. br.	d. br.	1	1
102.....	6.4	1	2	1,113	.....	165	144	122	.....	l. br.	l. br.	1	1
103.....	6.8	1	10	1,112	.....	169	148	116	.....	d. br.	bl.	5	4
104.....	6.10	1	5	1,075	.....	178	142	111	.....	bla.	bla.	4	4
105.....	6.9	1	2	1,220	683	175	139	115	.....	d. br.	gr.	2	1
106.....	6.0	1	1	1,129	630	.....	.....	.....	44	.....	.....	.....	.....
107.....	6.0	1	1	1,192	640	.....	.....	.....	45	.....	.....	.....	.....
108.....	6.11	1	1	1,176	603	.....	.....	.....	47	.....	.....	1	.....
109.....	6.7	1	1	1,132	606	.....	.....	.....	44	.....	.....	.....	.....
110.....	6.0	1	1	1,144	615	.....	.....	.....	47	.....	.....	.....	.....
111.....	6.11	1	1	1,155	627	.....	.....	.....	45	.....	.....	.....	.....
112.....	6.4	1	1	1,017	561	183	139	110	37	bl.	d. br.	.....	1

## REPEATED MEASUREMENTS.

Number in 5-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.	Number in 5-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.
1.....	6.8	.....	1,131	638	300	61	48	13.....	6.2	1	1,096	625	290	56	42
3.....	6.0	.....	1,124	614	312	61	44	14.....	6.1	1	1,133	605	295	59	40
9.....	6.9	2	1,185	615	330	58	46	17.....	6.1	1	1,143	630	310	62	45
10.....	6.9	1	1,222	675	320	56	47	18.....	6.4	1	1,172	640	320	61	55

## ADDITIONAL MEASUREMENTS.

Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.	Forearm.	Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.	Forearm.
84.....	1,064	90	.....	.....	.....	98.....	.....	91	.....	56	.....
85.....	1,112	94	.....	.....	.....	99.....	.....	102	147	64	.....
86.....	1,025	83	.....	.....	.....	100.....	.....	86	136	57	.....
87.....	1,206	102	.....	.....	.....	101.....	.....	89	132	55	.....
88.....	1,061	93	.....	.....	.....	102.....	.....	90	140	55	.....
89.....	1,144	90	.....	.....	.....	103.....	.....	94	140	53	.....
90.....	1,203	95	.....	.....	.....	104.....	.....	96	158	.....	.....
91.....	1,085	94	.....	.....	.....	105.....	1,224	91	144	58	.....
92.....	1,092	93	.....	.....	.....	106.....	.....	.....	.....	58	310
93.....	1,141	93	.....	.....	.....	107.....	.....	.....	.....	61	330
94.....	1,177	95	.....	.....	.....	108.....	.....	.....	.....	57	310
95.....	1,069	92	.....	.....	.....	109.....	.....	.....	.....	61	285
96.....	1,139	95	.....	.....	.....	110.....	.....	.....	.....	60	305
97.....	.....	102	160	.....	.....	111.....	.....	.....	.....	58	306

## 7-year-old boys. Worcester, Mass.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
1	7.6		4	1,293	697	188	143	124	63	br.	bl.	4	2
2	7.4		2	1,140	623	175	140	112	48	blo.	bl.	1	
3	7.10		3	1,170	638	177	144	123	58	l. br.	bl.	4	1
4	7.4		1	1,209	644	186	141	117	53	br.	bl.		1
5	7.3	2	2	1,286	697	179	150	123	61	br.	gr.		
6	7.3	2	1	1,155	641	180	146	116	45	blo.	g. bl.	1	
7	7.11		1	1,226	663	180	141	116	53	d. br.	d. br.		1
8	7.9		2	1,230	682	183	144	119	52	br.	gr.	1	
9	7.9		1	1,174	629	180	145	119	51	blo.	br.	1	
10	7.10	2	1	1,207	675	189	149	119	57	br.	gr.	1	
11	7.4		4	1,224	664	182	148	122	56	l. br.	l. br.	1	2
12	7.3		12	1,186	663	172	135	113	47	blo.	bl.	7	4
13	7.1		7	1,064	611	185	141	111	45	blo.	bl.	4	2
14	7.0		2	1,131	631	161	141	118	49	br.	gr.	2	1
15	7.6		2	1,141	661	168	144	119	48	blo.	bl.		1
16	7.6		1	1,136	620	180	137	112	49	blo.	gr.		2
17	7.0	2	5	1,180	660	182	139	116	51	r. br.	bl.	5	
18	7.6	2	3	1,206	661	181	140	115	52	d. br.	bl.	1	
19	7.7		2	1,147	619	172	144	113	45	br.	gr.	2	
20	7.0	2	1	1,119	640	188	145	114	49	br.	d. br.	1	2
21	7.4		5	1,105	611	175	134	110	44	blo.	d. br.	2	
22	7.2		4	1,161	635	182	142	114	47	blo.	bl.	2	1
23	7.10	2	1	1,144	618	168	132	108	42	br.	bl.	1	
24	7.1	2	6	1,063	581	175	146		42	br.	br.	4	2
25	7.5	2	5	1,199	683	177	141	114	55	r. br.	br.	2	3
26	7.6	2	1	1,171	641	178	142	118	49	br.	d. br.	2	1
27	7.6	1	2	1,062	624	174	142	113	47	blo.	g. bl.	1	1
28	7.10		2	1,209	680	187	147	119	53	blo.	bl.		1
29	7.3	1	3	1,164	638	175	137	114	46	br.	d. br.	2	
30	7.9	1	1	1,151	640	179	144	121	50	d. blo.	gr.	1	1
31	7.0	1	2	1,134	597	174	140	114	42	br.	d. br.	1	
32	7.3	1	5	1,240	715	195	152	129	55	br.	br.	2	2
33	7.3		8	1,118	633	180	145	112	44	d. blo.	bl.	2	2
34	7.0	1	4	1,174	646	185	141	119	53	br.	bl.	1	3
35	7.9	1	5	1,168	633	183	147	115	46	blo.	gr.	1	
36	7.6	1	1	1,201	680	185	139	112	54	blo.	gr.	1	1
37	7.8	1	8	1,128	628	176	132	114	42	d. blo.	d. blo.	2	
38	7.1	1	1	1,217	640	189	143	116	53	d. blo.	gr.		
39	7.9	3	3	1,112	594	185	136	106	45	blo.	g. bl.	1	1
40	7.10	3	3	1,228	684	184	140	109	51	r.	br.	1	5
41	7.1	3	1	1,253	690	189	145	118	52	blo.	bl.		
42	7.6	2	5	1,128	595	170	144	113	42	br.	l. br.	2	3
43	7.2	2	1	1,118	612	174	145	117	48	r. br.	br.	2	
44	7.6	2	3	1,221	630	185	146	118	53	br.	br.		3
45	7.3	1	8	1,161	612	175	140	114	50	d. br.	br.	1	2
46	7.2	1	2	1,118	628	175	140	114	42	br.	br.	3	
47	7.1	1	1	1,065	567	179	139	110	40	br.	bl.	1	
48	7.2	1	2	1,153	602	178	153	115	47	blo.	bl.		2
49	7.8	1	4	1,174	630	178	137	106	50	blo.	bl.	2	1
50	7.11	1	1	1,172	647	182	138	109	49	br.	d. br.	1	2
51	7.1	1		1,160	634	169	141	113	47	br.	gr.	1	
52	7.10	1	1	1,180	660	186	138	108	52	d. blo.	bl.	1	
53	7.5	1	1	1,066	602	175	144	113	39	d. blo.	bl.	1	
54	7.1	2	9	1,221	670	180	148	119	55	br.	bl.	3	6
55	7.11	2	2	1,157	652	175	141	114	43	br.	br.	3	3
56	7.7	2	4	1,185	660	178	143	109	44	br.	d. br.	2	2
57	7.6	2	2	1,177	662	171	142	113	49	br.	gr.		1
58	7.10	2	2	1,178	661	181	156	121	44	blo.	br.		1
59	7.7	2	2	1,150	653	180	147	113	43	d. blo.	gr.		1
60	7.5	2	2	1,139	624	175	142	113	39	br.	gr.	8	1
61	7.0			1,137	616	163	127	99	49	br.	br.		
62	7.1	1	6	1,105	607	175	142	109	43	br.	br.	2	3
63	7.4	1	1	1,192	652	175	141	109	49	br.	bl.	2	2
64	7.5	3	1	1,259	695	181	146	117	64	d. br.	g. bl.	1	2
65	7.9	2	3	1,190	643	174	139	106	47	br.	bl.	2	1
66	7.10	2	1	1,174	667	176	143	116	55	br.	bl.		1
67	7.7	2	2	1,141	618	182	136	114	50	br.	bl.	1	
68	7.7	2	1	1,247	694	184	147	117	56	br.	br.	1	
69	7.10	2	5	1,221	677	174	144	121	59	br.	bl.	1	7
70	7.9	1		1,213	644	176	151	122	53	br.	bl.	1	2
71	7.3	1		1,144	615	176	143	113	43	br.	bl.		
72	7.3	1		1,154	655	191	142	121	50	bla.	br.		
73	7.4	1		1,125	608	178	147	115	43	br.	br.		
74	7.2	1		1,124	647	178	145	117	43	d. blo.	br.		
75	7.4	1		1,186	617	184	138	113	41	br.	br.		
76	7.7	3	1	1,205	667	188	137	114	57	d. br.	bl.		
77	7.8	1	1	1,167	646	171	146	117	47	blo.	br.		
78	7.3	2	6	1,171	635	187	146	119	50	d. br.	d. br.	4	1
79	7.7	2	1	1,090	622	166	139	107	39	d. br.	d. br.		3
80	7.6	1	2	1,215	673	180	146	114	49	d. br.	d. br.	2	1

## 7-year-old boys. Worcester, Mass.—Continued.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
81.....	7.3	1	1	1,229	691	179	142	119	53	d. br.	d. br.	1	2
82.....	7.0	3	1	1,197	614	179	140	113	48	br.	g. bl.	1	1
83.....	7.1	2	1	1,182	657	184	142	118	59	br.	bl.	2	2
84.....	7.1	2	1	1,262	687	174	144	122	58	blo.	bl.	1	1
85.....	7.6	2	1	1,114	627	169	133	108	40	br.	bl.	1	1
86.....	7.3	2	1	1,147	688	177	140	116	53	br.	bl.	1	1
87.....	7.2	1	1	1,246	654	180	138	118	48	br.	bl.	1	1
88.....	7.8	1	1	1,133	622	180	141	113	46	blo.	bl.	1	1
89.....	7.4	1	1	1,145	632	176	136	113	51	br.	bl.	1	1
90.....	7.4	1	1	1,111	630	174	140	116	41	d. br.	d. br.	1	1
91.....	7.11	1	1	1,148	587	177	137	111	36	d. br.	d. br.	1	1
92.....	7.11	1	5	1,175	650	180	145	117	49	br.	br.	1	1
93.....	7.4	1	1	1,198	667	184	132	107	53	br.	d. br.	1	4
94.....	7.7	2	1	1,180	612	183	141	109	46	br.	br.	2	1
95.....	7.11	1	1	1,129	613	172	132	110	45	d. br.	d. br.	2	2
96.....	7.3	4	4	1,231	654	178	148	122	55	blo.	br.	1	1
97.....	7.2	2	2	1,203	639	184	140	109	53	br.	br.	1	1
98.....	7.11	3	5	1,224	663	179	148	114	59	blo.	br.	3	3
99.....	7.9	2	4	1,189	640	184	148	117	47	blo.	gr.	3	3
100.....	7.5	4	4	1,213	649	184	138	117	56	blo.	g. bl.	1	1
101.....	7.10	2	1	1,202	674	180	150	118	58	blo.	g. bl.	1	2
102.....	7.11	4	4	1,214	630	178	147	117	45	blo.	gr.	3	1
103.....	7.4	2	2	1,243	642	185	146	118	53	br.	g. bl.	1	1
104.....	7.4	3	3	1,197	632	183	142	115	57	d. br.	d. br.	2	1
105.....	7.0	2	1	1,219	647	179	149	120	49	br.	bl.	1	1
106.....	7.6	2	1	1,265	707	182	142	116	61	r. br.	bl.	1	1
107.....	7.4	2	8	1,179	661	188	144	115	48	br.	l. br.	1	5
108.....	7.5	1	1	1,227	663	191	147	120	64	br.	g. bl.	1	1
109.....	7.6	1	1	1,188	647	189	139	113	50	d. br.	d. br.	1	2
110.....	7.4	1	2	1,194	614	182	142	115	53	blo.	d. br.	1	2
111.....	7.7	1	1	1,150	655	188	146	118	52	br.	bl.	1	1
112.....	7.4	1	2	1,113	616	184	135	109	45	bla.	d. br.	1	1
113.....	7.0	1	1	1,097	607	176	137	117	44	blo.	bl.	1	1
114.....	7.2	1	1	1,187	624	189	136	110	47	br.	br.	1	1
115.....	7.1	1	2	1,149	650	185	146	113	50	br.	br.	2	2
116.....	7.9	1	4	1,156	627	177	147	118	54	br.	gr.	2	1
117.....	7.9	1	1	1,140	605	177	141	118	42	blo.	bl.	1	1
118.....	7.3	1	2	1,136	640	183	131	109	46	br.	g. bl.	1	1
119.....	7.4	1	3	1,179	675	171	148	121	53	br.	br.	2	2
120.....	7.7	1	1	1,108	630	182	139	117	48	blo.	bl.	1	1
121.....	7.4	1	2	1,146	633	176	137	109	47	blo.	bl.	1	1
122.....	7.9	1	5	1,170	650	178	147	119	54	d. br.	d. br.	2	2
123.....	7.8	1	4	1,172	646	174	139	112	50	br.	g. bl.	3	2
124.....	7.6	4	5	1,182	650	189	139	109	52	d. br.	gr.	3	2
125.....	7.10	2	2	1,186	660	171	145	110	52	d. br.	bl.	2	2
126.....	7.5	1	1	1,266	610	174	139	117	59	br.	br.	1	1
127.....	7.6	2	3	1,219	660	187	145	114	57	d. br.	gr.	1	1
128.....	7.10	2	1	1,233	670	177	138	118	60	d. br.	bl.	1	1
129.....	7.6	2	3	1,319	720	196	136	119	62	d. blo.	gr.	1	1
130.....	7.7	1	1	1,150	610	181	131	115	50	d. blo.	g. bl.	1	1
131.....	7.5	2	2	1,144	630	174	141	118	50	d. blo.	bl.	1	1
132.....	7.9	1	7	1,196	610	185	137	119	48	d. br.	bl.	4	3
133.....	7.7	1	5	1,107	620	167	136	109	49	d. br.	d. br.	1	1
134.....	7.2	1	1	1,233	670	178	148	121	57	d. br.	l. br.	1	1
135.....	7.8	1	1	1,221	670	188	140	115	53	l. br.	gr.	5	5
136.....	7.5	1	9	1,189	660	171	140	117	50	d. br.	d. br.	3	1
137.....	7.2	1	2	1,135	600	171	149	116	45	d. br.	bl.	2	2
138.....	7.9	1	2	1,172	650	171	140	110	52	d. br.	bl.	2	2
139.....	7.0	1	2	1,119	600	176	139	118	50	d. blo.	bl.	2	2
140.....	7.1	2	1	1,195	629	190	141	116	55	d. blo.	gr.	1	1
141.....	7.6	2	1	1,218	700	184	145	120	60	l. br.	d. br.	1	1
142.....	7.10	1	2	1,192	610	179	135	113	55	l. br.	gr.	1	1
143.....	7.0	1	6	1,202	660	198	144	124	60	bla.	d. br.	2	4
144.....	7.9	1	1	1,250	693	192	139	114	60	d. br.	gr.	2	1
145.....	7.11	4	1	1,250	665	175	146	121	60	l. br.	d. br.	1	1
146.....	7.11	1	1	1,111	580	172	137	111	38	br.	br.	1	1
147.....	7.0	1	1	1,097	595	172	137	111	39	br.	br.	1	1
148.....	7.5	2	1	1,166	645	177	140	117	47	d. blo.	gr.	1	1
149.....	7.4	2	1	1,239	685	177	140	117	47	d. blo.	gr.	1	1
150.....	7.6	1	1	1,172	640	177	140	117	44	d. blo.	gr.	1	1
151.....	7.5	1	1	1,147	635	177	140	117	43	d. blo.	gr.	1	1
152.....	7.8	1	1	1,184	680	177	140	117	48	d. blo.	gr.	1	1
153.....	7.9	2	1	1,267	690	177	140	117	59	d. blo.	gr.	1	1
154.....	7.5	2	1	1,240	660	177	140	117	56	d. blo.	gr.	1	1
155.....	7.7	1	1	1,187	650	177	140	117	52	d. blo.	gr.	1	1
156.....	7.4	1	1	1,191	610	177	140	117	46	d. blo.	gr.	1	1
157.....	7.6	2	1	1,156	625	177	140	117	46	d. blo.	gr.	1	1
158.....	7.5	2	1	1,277	695	177	140	117	62	d. blo.	gr.	1	1
159.....	7.5	2	1	1,154	640	177	140	117	51	d. blo.	gr.	1	1
160.....	7.1	2	1	1,251	680	177	140	117	58	d. blo.	gr.	1	1
161.....	7.11	2	1	1,230	637	177	140	117	59	d. blo.	gr.	1	1



7-year-old boys. Worcester, Mass.—Continued.

## REPEATED MEASUREMENTS.

Number in 6-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.	Number in 6-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.
2	7.7	1	1.161	650	380	58	47	29	7.2	2	1.240	670	385	64	50
3	7.5	2	1.218	646	342	61	56	31	7.11	2	1.192	650	310	61	51
4	7.5	2	1.193	642	327	61	49	33	7.8	2	1.180	640	320	62	48
5	7.9	2	1.167	640	326	67	54	35	7.1	2	1.152	640	305	63	52
6	7.9	2	1.244	685	425	63	57	36	7.7	2	1.156	655	300	57	49
7	7.4	1	1.207	645	324	63	52	37	7.8	2	1.203	640	335	63	53
10	7.5	2	1.185	628	304	59	50	38	7.5	2	1.149	640	300	60	47
12	7.8	2	1.196	628	320	60	51	40	7.4	2	1.232	690	340	69	60
13	7.8	2	1.092	588	290	56	38	41	7.8	2	1.102	620	280	59	42
14	7.10	2	1.331	712	367	68	62	43	7.8	2	1.132	600	310	62	45
15	7.3	2	1.205	652	328	67	57	44	7.3	2	1.142	625	320	58	45
16	7.6	2	1.230	670	330	62	61	46	7.9	2	1.290	690	350	66	60
17	7.1	2	1.217	685	334	63	55	47	7.7	2	1.209	650	310	58	50
18	7.4	2	1.193	648	325	63	54	48	7.5	2	1.198	635	315	55	50
19	7.11	2	1.192	645	330	54	45	51	7.9	2	1.149	625	310	65	43
20	7.3	2	1.222	660	340	70	62	53	7.7	2	1.143	640	300	58	47
21	7.8	1	1.180	668	325	64	48	56	7.5	2	1.116	620	295	56	44
23	7.10	2	1.192	638	324	63	49	57	7.6	2	1.226	690	340	66	53
24	7.6	2	1.159	650	310	58	55	58	7.0	2	1.249	690	350	63	55
26	7.11	2	1.204	650	325	58	52	62	7.6	2	1.156	650	300	60	56
28	7.4	2	1.128	635	300	58	42	112	7.4	1	1.075	595	305	56	40

## ADDITIONAL MEASUREMENTS.

Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.	Forearm.	Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.	Forearm.
110	1.180	92	.....	.....	.....	136	.....	87	.....	58	.....
111	1.150	100	.....	.....	.....	137	.....	90	134	58	.....
112	1.204	101	.....	.....	.....	138	.....	90	132	58	.....
113	1.049	97	.....	.....	.....	139	.....	98	141	54	.....
114	1.133	90	.....	.....	.....	140	.....	97	145	60	.....
115	1.176	98	.....	.....	.....	141	.....	96	147	64	.....
116	1.157	108	.....	.....	.....	142	.....	88	134	57	.....
117	1.154	92	.....	.....	.....	143	.....	98	160	66	.....
118	1.145	86	.....	.....	.....	144	1.248	100	158	60	.....
119	1.212	96	.....	.....	.....	145	1.249	101	161	.....	.....
120	1.075	94	.....	.....	.....	146	.....	.....	.....	52	290
121	1.151	95	.....	.....	.....	147	.....	.....	.....	58	300
122	1.168	101	.....	.....	.....	148	.....	.....	.....	59	310
123	1.162	92	.....	.....	.....	149	.....	.....	.....	67	340
124	.....	93	140	.....	.....	150	.....	.....	.....	58	320
125	.....	96	151	.....	.....	151	.....	.....	.....	58	300
126	.....	91	144	.....	.....	152	.....	.....	.....	61	310
127	.....	96	158	.....	.....	153	.....	.....	.....	68	335
128	.....	106	157	.....	.....	154	.....	.....	.....	68	330
129	.....	100	158	.....	.....	155	.....	.....	.....	60	320
130	.....	98	144	.....	.....	156	.....	.....	.....	53	290
131	.....	99	147	.....	.....	157	.....	.....	.....	57	315
132	.....	98	151	.....	.....	158	.....	.....	.....	67	350
133	.....	92	142	.....	.....	159	.....	.....	.....	61	313
134	.....	100	151	63	.....	160	.....	.....	.....	63	345
135	.....	97	131	58	.....	161	.....	.....	.....	63	350

## STATISTICS OF GROWTH.

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## 8-year-old boys. Worcester, Mass.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
1	8.10	4	3	1,201	653	187	142	115	51	br.	bl.	1	2
2	8.11		1	1,270	653	186	147	119	56	blo.	bl.	1	2
3	8.2		1	1,197	627	174	151	118	48	br.	bl.		
4	8.11		1	1,270	694	186	148	121	62	br.	bl.	1	
5	8.0		1	1,280	673	188	145	115	59	blo.	bl.	1	
6	8.3		1	1,188	665	176	142	119	48	l. br.	l. br.		
7	8.9	3	2	1,276	660	180	149	120	58	br.	bl.		2
8	8.4		1	1,188	657	177	142	113	49	br.	d. br.	1	
9	8.10		6	1,208	651	180	143	107	47	r.	d. br.		5
10	8.6		2	1,262	694	180	140	116	55	l. br.	bl.	3	
11	8.10		3	1,276	698	189	136	117	63	l. br.	bl.	2	2
12	8.6	3	1	1,243	665	187	141	112	49	d. br.	g. bl.		
13	8.6		1	1,271	700	183	147	116	55	l. br.	bl.		
14	8.4	3	2	1,308	714	186	142	115	63	blo.	bl.		1
15	8.9		1	1,171	645	185	143	123	53	blo.	bl.		
16	8.6		1	1,334	734	182	141	121	69	br.	bl.		
17	8.0		3	1,290	710	187	137	118	62	d. br.	d. br.		3
18	8.0		3	1,224	651	184	146	116	51	blo.	bl.		2
19	8.3		1	1,216	632	180	143	119	62	d. blo.	d. br.	1	1
20	8.9		5	1,221	692	186	151	112	58	blo.	bl.		4
21	8.9	2	2	1,209	663	177	137	129	47	blo.	bl.	2	
22	8.10		1	1,210	651	179	139	111	48	d. br.	d. br.	1	
23	8.11		2	1,190	658	179	145	110	52	d. blo.	gr.	2	2
24	8.7		4	1,302	634	179	142	113	54	br.	gr.		4
25	8.11		2	1,267	677	178	136	112	52	br.	bl.	1	
26	8.0		1	1,197	662	179	137	118	51	br.	br.	1	
27	8.0		5	1,150	650	172	144	111	47	l. br.	bl.	6	1
28	8.11	2	2	1,169	642	179	139	113	46	l. br.	l. br.	1	
29	8.9	2	6	1,396	687	179	140	117	65	blo.	bl.	6	2
30	8.5		3	1,303	642	184	142	112	49	br.	d. br.	1	1
31	8.6	1	3	1,109	614	170	142	112	46	br.	bl.		3
32	8.11	4	3	1,305	712	178	149	118	61	bla.	l. br.	1	2
33	8.5	4	2	1,240	660	181	139	113	50	br.	gr.	2	1
34	8.7	3	3	1,228	663	186	140	108	53	d. blo.	gr.	1	1
35	8.11	3	3	1,332	676	184	141	112	57	blo.	g. bl.	1	3
36	8.5	3	5	1,329	717	185	153	121	61	blo.	bl.	2	2
37	8.2	3	4	1,168	623	185	150	116	52	br.	g. bl.	1	5
38	8.8	3	5	1,352	704	179	139	119	62	d. br.	l. br.		6
39	8.9	3	2	1,250	663	183	140	115	54	blo.	bl.	1	1
40	8.5	2	2	1,276	704	181	148	121	70	d. br.	g. bl.		2
41	8.1	2	4	1,212	637	181	141	114	53	d. blo.	g. bl.	3	
42	8.6		1	1,289	660	185	141	118	81	d. br.	br.		
43	8.10		3	1,157	635	176	140	114	49	d. blo.	g. bl.	1	3
44	8.11	2	1	1,190	643	189	141	116	48	d. blo.	g. bl.	1	1
45	8.3	2	5	1,144	631	181	147	110	47	d. blo.	g. bl.	4	2
46	8.10		2	1,265	696	185	140	116	54	blo.	l. br.	4	
47	8.1	1	4	1,170	614	176	143	110	48	br.	br.	1	2
48	8.11	3	6	1,189	645	175	136	114	57	br.	gr.	4	2
49	8.10	3	2	1,274	695	184	148	115	57	br.	br.	2	2
50	8.9	3	4	1,283	683	182	139	121	61	bla.	gr.	3	1
51	8.10	2	2	1,265	699	191	149	128	64	br.	g. br.		
52	8.8	2	1	1,234	684	184	145	121	57	d. br.	br.	2	2
53	8.6	4	4	1,210	676	186	142	121	55	br.	bl.	1	3
54	8.8	3	1	1,247	692	171	146	119	52	blo.	br.		
55	8.4	3	1	1,215	670	183	138	111	50	blo.	bl.	1	1
56	8.11	3	5	1,214	679	185	143	115	58	blo.	bl.	5	2
57	8.5	3	1	1,205	629	184	144	117	47	blo.	bl.		
58	8.3	3	1	1,261	683	180	151	122	60	d. br.	bl.	1	1
59	8.6	2	2	1,111	619	184	143	109	45	l. br.	bl.	2	1
60	8.1	2	2	1,200	602	183	147	118	50	br.	bl.	1	
61	8.3		1	1,237	672	181	143	113	51	blo.	bl.		2
62	8.6	2	1	1,217	649	178	153	119	50	br.	bl.	1	
63	8.5	2	2	1,250	678	174	145	122	57	blo.	bl.		1
64	8.1	3	3	1,260	684	180	148	117	66	br.	gr.		4
65	8.2	2	2	1,177	633	176	147	114	48	d. br.	bl.		1
66	8.7	2	2	1,280	688	178	139	114	59	br.	gr.		2
67	8.0	3	5	1,196	621	179	152	122	50	br.	br.	4	1
68	8.5	3	2	1,228	647	189	150	118	57	d. br.	bl.	1	2
69	8.7	3	1	1,385	725	192	147	123	73	blo.	bl.		1
70	8.6	3	7	1,291	702	186	146	119	60	d. br.	g. bl.	4	4
71	8.7	3	1	1,275	710	180	142	117	62	br.	d. br.		1
72	8.1	2	5	1,186	643	173	142	115	50	d. br.	d. br.	2	2
73	8.0		1	1,182	612	165	134	112	41	d. br.	g. br.	3	1
74	8.4	2	10	1,225	685	173	147	117	51	d. blo.	bl.	5	6
75	8.5	2	2	1,308	713	183	145	115	63	d. br.	bl.	1	
76	8.5	3	3	1,156	604	180	149	119	50	d. br.	d. br.	3	
77	8.10	4	2	1,235	673	173	142	114	53	d. br.	gr.	3	1

## 8-year-old boys. Worcester, Mass.—Continued.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
78.....	8.0	3	3	1,232	663	189	152	127	54	d. br.	bl.	1	2
79.....	8.5	2	3	1,227	673	177	143	114	50	l. br.	bl.	---	1
80.....	8.8	2	1	1,264	687	177	148	109	50	blo.	br.	---	2
81.....	8.9	2	5	1,186	621	174	140	115	49	d. br.	br.	4	3
82.....	8.7	2	2	1,283	676	185	144	122	59	r. br.	bl.	1	---
83.....	8.0	2	9	1,185	668	183	137	112	48	blo.	br.	5	3
84.....	8.11	3	4	1,275	700	184	148	117	53	d. br.	gr.	2	1
85.....	8.9	3	1	1,142	632	179	148	119	47	br.	gr.	---	1
86.....	8.6	3	1	1,240	676	184	147	115	57	l. br.	bl.	1	---
87.....	8.10	2	2	1,184	660	177	145	116	50	br.	bl.	---	1
88.....	8.0	2	1	1,216	653	159	130	108	49	l. br.	g. bl.	---	---
89.....	8.4	2	4	1,210	660	172	146	120	56	br.	gr.	1	3
90.....	8.9	1	1	1,186	636	180	140	119	46	br.	br.	---	---
91.....	8.2	1	3	1,165	636	176	144	117	53	br.	br.	3	1
92.....	8.6	3	3	1,260	668	182	142	119	58	blo.	g. bl.	---	2
93.....	8.2	1	2	1,138	629	175	147	121	53	d. br.	d. br.	2	1
94.....	8.5	4	3	1,388	734	186	150	127	68	br.	bl.	1	1
95.....	8.6	3	4	1,229	659	168	144	116	51	blo.	bl.	1	2
96.....	8.10	3	6	1,232	633	174	142	115	53	br.	br.	2	1
97.....	8.10	3	2	1,225	659	185	139	111	53	blo.	gr.	---	---
98.....	8.1	3	2	1,293	683	177	149	116	63	br.	br.	1	3
99.....	8.7	3	4	1,259	648	186	143	119	56	l. br.	br.	---	---
100.....	8.4	3	3	1,232	672	180	147	119	58	l. br.	gr.	---	2
101.....	8.8	3	3	1,310	682	187	139	117	65	br.	gr.	2	---
102.....	8.1	2	1	1,232	649	180	151	116	56	br.	br.	---	---
103.....	8.7	2	2	1,283	696	180	140	116	54	br.	bl.	1	1
104.....	8.1	2	1	1,272	673	181	144	117	57	blo.	br.	1	1
105.....	8.0	2	1	1,330	710	185	133	111	57	blo.	bl.	1	1
106.....	8.0	2	4	1,314	716	191	140	121	60	blo.	gr.	2	2
107.....	8.4	2	2	1,149	627	176	135	109	44	br.	gr.	---	---
108.....	8.2	2	3	1,190	663	169	149	119	50	br.	br.	3	2
109.....	8.7	1	7	1,171	642	174	137	111	56	d. br.	gr.	2	4
110.....	8.5	1	4	1,204	631	175	136	114	49	d. br.	d. br.	2	1
111.....	8.4	1	1	1,113	621	176	140	113	46	br.	bl.	1	---
112.....	8.2	4	5	1,293	---	181	145	124	---	d. br.	d. br.	2	4
113.....	8.1	3	6	1,190	---	184	142	118	---	blo.	gr.	2	3
114.....	8.6	2	2	1,267	---	172	142	118	---	blo.	gr.	1	3
115.....	8.6	1	4	1,178	---	179	142	123	---	d. br.	bl.	1	3
116.....	8.1	1	2	1,135	---	172	150	120	---	l. br.	bl.	---	1
117.....	8.4	2	2	1,229	---	178	142	115	---	d. br.	gr.	---	1
118.....	8.6	2	1	1,193	---	181	150	122	---	d. br.	gr.	3	1
119.....	8.10	4	2	1,305	---	174	140	118	---	d. br.	d. br.	1	1
120.....	8.4	3	1	1,206	---	181	137	111	---	d. blo.	gr.	2	1
121.....	8.11	3	1	1,321	---	188	140	116	---	d. br.	l. br.	3	1
122.....	8.1	1	---	1,224	675	---	---	---	52	---	---	---	---
123.....	8.5	2	---	1,200	667	---	---	---	52	---	---	---	---
124.....	8.1	2	---	1,269	675	---	---	---	59	---	---	---	---
125.....	8.11	2	---	1,073	620	---	---	---	47	---	---	---	---
126.....	8.5	3	---	1,331	693	---	---	---	63	---	---	---	---
127.....	8.7	---	---	1,255	680	---	---	---	56	---	---	---	---
128.....	8.0	1	---	1,176	640	---	---	---	49	---	---	---	---
129.....	8.3	3	---	1,261	690	---	---	---	60	---	---	---	---
130.....	8.11	4	---	---	660	---	---	---	78	---	---	---	---
131.....	8.6	3	---	1,237	670	---	---	---	53	---	---	---	---
132.....	8.3	3	---	1,323	625	---	---	---	35	---	---	---	---
133.....	8.1	2	---	1,197	650	---	---	---	55	---	---	---	---
134.....	8.10	2	---	1,243	655	---	---	---	50	---	---	---	---
135.....	8.10	2	---	1,242	680	---	---	---	53	---	---	---	---
136.....	8.1	1	---	1,210	653	---	---	---	56	---	---	---	---
137.....	8.0	2	---	1,205	660	---	---	---	53	---	---	---	---

## STATISTICS OF GROWTH.

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8-year-old boys. Worcester, Mass.—Continued.

## REPEATED MEASUREMENTS.

Number in 7-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.	Number in 7-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.
2	8.5	2	1,203	684	332	67	52	46	8.8	2	1,167	645	300	60	47
3	8.10	4	1,221	662	341	65	55	48	8.5	2	1,200	630	335	61	51
5	8.9	4	1,348	716	362	69	69	52	8.11	2	1,241	680	340	61	57
8	8.9	4	1,282	698	346	66	60	54	8.1	2	1,373	700	340	61	60
9	8.10	4	1,235	665	320	57	57	56	8.5	2	1,232	680	340	61	53
10	8.10	4	1,262	685	330	59	60	57	8.5	2	1,243	670	325	57	56
11	8.4	4	1,280	673	340	64	63	58	8.11	2	1,229	680	340	64	51
12	8.2	4	1,244	680	341	63	56	59	8.8	2	1,186	670	310	61	51
13	8.0	4	1,183	645	310	60	50	60	8.6	2	1,188	650	325	61	46
14	8.1	4	1,180	670	324	66	54	62	8.6	2	1,197	645	310	60	48
17	8.0	4	1,237	670	345	62	57	63	8.9	2	1,253	685	325	62	56
18	8.7	4	1,252	674	344	64	55	65	8.9	2	1,256	670	330	62	49
19	8.8	4	1,188	640	336	63	50	66	8.10	2	1,225	685	330	63	57
20	8.0	4	1,253	646	367	60	55	67	8.7	2	1,219	640	330	55	55
21	8.5	4	1,163	635	315	60	49	71	8.4	1	1,201	640	325	64	48
22	8.3	4	1,216	664	327	63	53	73	8.5	1	1,174	610	325	60	47
23	8.9	4	1,184	630	310	60	45	74	8.3	2	1,176	650	325	60	47
24	8.1	4	1,110	595	305	62	45	75	8.4	2	1,242	640	335	58	48
25	8.4	4	1,248	688	330	63	60	76	8.8	4	1,204	680	340	68	70
26	8.5	4	1,212	662	325	60	54	77	8.3	4	1,211	670	340	68	51
28	8.10	4	1,254	693	328	64	60	78	8.4	3	1,223	660	325	65	57
29	8.3	4	1,230	670	335	57	51	79	8.7	3	1,145	640	310	63	48
31	8.0	4	1,192	647	315	62	46	81	8.11	3	1,287	720	335	67	58
32	8.7	4	1,900	725	350	66	60	83	8.0	3	1,242	670	330	62	62
33	8.2	4	1,165	648	308	63	48	84	8.0	3	1,315	710	360	63	62
37	8.8	4	1,166	620	310	64	44	85	8.6	3	1,173	655	325	58	54
39	8.10	4	1,166	620	320	58	48	86	8.4	3	1,207	695	320	63	58
40	8.11	4	1,282	710	470	64	56	88	8.9	3	1,175	625	315	59	51
42	8.4	4	1,176	635	320	61	50	89	8.6	3	1,194	640	340	65	54
43	8.3	4	1,177	660	320	60	51	92 <sup>a</sup>	8.0	3	1,250	660	345	62	54
44	8.7	4	1,281	675	350	63	57	94	8.7	1	1,231	645	320	62	51
45	8.4	2	1,222	670	365	66	56								

<sup>a</sup> See 92, 7 year series, age 7.11.

## ADDITIONAL MEASUREMENTS.

Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.	Forearm.	Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.	Forearm.
109	1,180	95				124				64	336
110	1,180	92				125				70	330
111	1,085	92				126				67	365
112		98	148			127				70	340
113		103	153			128				62	320
114		100	160			129				60	330
115		100	157	59		130				60	340
116		97	144	53		131				58	325
117		97	148	62		132				56	320
118		96	147	59		133				64	335
119		102	159	63		134				64	340
120		96	156	61	340	135				65	335
121		98	161	61	360	136				61	324
122				61	330	137				59	320
123				63	323						

## 9-year-old boys. Worcester, Mass.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
1.	9.7		3	1,368	715	182	139	122		blo.	bl.	1	2
2.	9.11	5	2	1,247	764	180	145	117	56	br.	g. bl.	1	1
3.	9.6	5	3	1,271	697	181	141	118	59	br.	bl.	1	2
4.	9.11	5	3	1,374	738	183	150	124	70	blo.	bl.	1	1
5.	9.2		2	1,288	692	184	155	121	63	l. br.	bl.	1	2
6.	9.6	5	3	1,392	747	174	152	127	63	br.	g. bl.		2
7.	9.9	4	1	1,238	679	177	142	121	59	br.	br.		
8.	9.7	4	5	1,242	691	178	149	121	62	d. br.	br.	1	3
9.	9.7		3	1,387	736	183	149	124	101	br.	br.	1	
10.	9.11	4	2	1,273	676	176	146	119	66	blo.	gr.		2
11.	9.11		2	1,252	673	194	150	122	59	br.	g. bl.	1	1
12.	9.0		2	1,410	745	189	148	128	70	d. br.	l. br.	3	1
13.	9.1		3	1,341	733	191	148	122	68	br.	bl.	3	1
14.	9.3	4	2	1,279	694	176	139	114	53	l. br.	l. br.	1	
15.	9.4	4	3	1,278	696	181	148	126	62	br.	gr.	1	1
16.	9.2		2	1,270	677	190	141	119	56	d. br.	bl.	4	1
17.	9.1	4	1	1,273	682	180	146	116	60	br.	gr.	1	1
18.	9.9	4	3	1,276	688	182	136	117	62	blo.	gr.	1	1
19.	9.7	4	1	1,312	708	188	146	127	69	br.	bl.	2	
20.	9.8	3	1	1,229	665	183	143	113	51	l. br.	gr.	2	2
21.	9.5		1	1,367	720	180	141	112	73	l. br.	gr.		
22.	9.3	3	1	1,187	649	175	141	117	54	blo.	bl.	2	
23.	9.0		1	1,322	711	182	145	117	70	l. br.	bl.		1
24.	9.5	3	4	1,232	699	170	138	120	53	blo.	g. bl.	2	
25.	9.2	3	3	1,263	685	175	147	119	59	br.	bl.	3	3
26.	9.8	3	4	1,381	725	186	150	125	74	d. br.	d. br.	1	3
27.	9.3	3	4	1,227	643	172	144	115	51	br.	l. br.		3
28.	9.1	3	5	1,350	718	166	145	125	65	blo.	bl.	2	2
29.	9.5		1	1,211	640	168	139	114	49	d. br.	bl.		
30.	9.4	3	3	1,324	686	179	143	121	63	d. br.	br.	1	1
31.	9.10		1	1,227	671	175	144	118	57	br.	g. bl.		
32.	9.6		1	1,262	694	190	142	116	58	r.	bl.	4	2
33.	9.6		1	1,250	687	176	155	123	60	d. br.	d. br.	2	1
34.	9.3		1	1,200	667	177	143	115	52	d. br.	gr.	1	
35.	9.4		1	1,369	708	180	144	119	59	br.	br.		1
36.	9.1		1	1,270	691	180	140	115	53	blo.	bl.		
37.	9.2		1	1,342	724	184	144	116	54	br.	bl.	2	1
38.	9.1		3	1,243	691	181	145	117	56	r. br.	bl.	2	3
39.	9.9	3	3	1,225	674	172	144	117	56	d. br.	gr.	6	1
40.	9.9	3	1	1,280	695	181	147	120	63	br.	bl.	2	
41.	9.10	3	5	1,304	694	181	140	118	55	br.	bl.	2	2
42.	9.7	2	3	1,203	654	185	146	115	55	br.	l. br.	1	
43.	9.0	2	2	1,294	685	183	153	122	60	d. blo.	bl.	2	1
44.	9.0	2	1	1,229	686	175	141	118	53	r.	bl.		2
45.	9.1	4	6	1,330	743	187	138	117	65	br.	l. br.	4	2
46.	9.4	4	3	1,312	703	189	138	116	69	br.	br.	1	1
47.	9.8	5	3	1,332	696	180	146	120	64	br.	l. br.	3	2
48.	9.11	4	2	1,245	675	193	150	120	72	blo.	g. bl.	1	
49.	9.5	4	3	1,223	662	180	141	120	50	br.	gr.	2	1
50.	9.3	3	2	1,276	692	186	140	116	60	l. br.	gr.		1
51.	9.8	3	3	1,198	646	180	139	109	54	d. blo.	g. bl.	3	
52.	9.3	3	4	1,304	696	180	149	122	60	blo.	gr.	2	3
53.	9.10	3	3	1,356	691	189	152	122	68	br.	bl.	3	
54.	9.5	3	3	1,240	689	189	142	113	54	br.	gr.		4
55.	9.7	3	3	1,276	672	175	142	115	58	br.	g. bl.	1	3
56.	9.2	3	1	1,202	646	177	140	111	50	d. blo.	gr.	3	
57.	9.0	3	1	1,295	672	166	140	115	57	r.	bl.		
58.	9.10	4	2	1,285	683	165	135	111	59	l. br.	bl.	1	
59.	9.8	2	1	1,331	701	180	144	120	66	br.	g. bl.		2
60.	9.4	3	1	1,260	678	187	142	118	60	r.	br.		4
61.	9.8	3	4	1,280	717	168	141	120	62	l. br.	bl.	1	
62.	9.5	2	3	1,296	686	182	143	114	59	d. br.	l. br.		3
63.	9.10	2	2	1,341	714	174	145	115	60	d. blo.	gr.	2	4
64.	9.7	2	1	1,211	665	176	156	122	57	d. blo.	br.	2	2
65.	9.4	2	1	1,188	645	178	150	117	48	br.	bl.	4	1
66.	9.7	2	1	1,211	667	179	142	116	51	br.	br.	2	1
67.	9.3	2	10	1,264	693	185	146	122	65	d. br.	br.	1	8
68.	9.1	1	1	1,306	705	176	146	116	60	blo.	bl.	2	2
69.	9.0	1	3	1,168	656	177	142	110	48	r.	br.	1	1
70.	9.8	1	1	1,176	623	173	130	108	51	br.	br.	1	3
71.	9.11	5	4	1,319	724	190	153	116	67	br.	bl.	1	
72.	9.4	4	2	1,243	690	174	142	120	53	d. blo.	g. bl.		1
73.	9.9	4	1	1,298	698	178	143	120	66	br.	bl.		1
74.	9.10	4	1	1,417	744	178	146	121	68	d. blo.	br.		
75.	9.9	4	1	1,366	724	186	144	126	69	d. br.	lt. br.		
76.	9.6	4	3	1,171	600	187	143	113	46	br.	bl.	4	
77.	9.4	4	4	1,284	719	182	146	121	64	br.	bl.	1	2
78.	9.10	4	4	1,320	698	182	146	117	66	br.	d. br.	3	
79.	9.7	3	1	1,228	670	180	142	114	51	d. br.	gr. bl.		
80.	9.3	3	3	1,308	718	180	140	114	68			1	1

## STATISTICS OF GROWTH.

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9-year-old boys. Worcester, Mass.—Continued.

number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
.....	9.10	3	1	1,301	734	184	144	122	64	br.	gr. br.	1	.....
.....	9.5	3	6	1,297	667	181	150	123	77	blo.	bl.	2	3
.....	9.4	3	2	1,306	737	185	144	120	87	br.	bl.	1	.....
.....	9.2	3	4	1,271	680	170	133	114	57	lt.	bl.	1	2
.....	9.7	3	1	1,259	681	188	143	115	61	blo.	br.	.....	.....
.....	9.0	3	1	1,170	660	171	142	117	58	blo.	bl.	.....	1
.....	9.5	2	4	1,326	690	182	145	120	65	br.	grn.	2	1
.....	9.0	2	2	1,260	662	179	145	119	55	blo.	br.	1	.....
.....	9.7	2	4	1,240	665	179	140	115	51	br.	bl.	1	2
.....	9.6	5	5	1,200	634	181	150	117	59	br.	gr. br.	3	3
.....	9.5	5	3	1,313	716	178	153	121	59	br.	gr.	4	1
.....	9.11	4	1	1,316	699	181	140	116	55	br.	bl.	3	4
.....	9.9	4	3	1,316	698	185	145	120	64	br.	grn. gr.	2	2
.....	9.4	3	3	1,323	663	182	136	115	49	d. blo.	bl.	1	1
.....	9.1	3	1	1,310	674	184	135	115	56	d. br.	gr. br.	1	1
.....	9.0	3	5	1,305	705	182	147	124	59	d. br.	bl.	7	3
.....	9.3	3	6	1,245	688	182	140	115	54	d. br.	grn.	2	6
.....	9.5	3	3	1,259	652	180	137	117	54	br.	bl.	2	2
.....	9.5	2	10	1,175	610	165	140	112	48	d. br.	bl.	5	5
.....	9.2	2	11	1,245	666	172	137	116	55	br.	br.	5	6
.....	9.7	4	2	1,238	675	181	136	111	60	d. br.	d. br.	2	2
.....	9.7	4	5	1,284	696	184	149	122	60	br.	bl.	2	2
.....	9.7	4	3	1,227	682	179	136	115	60	br.	br.	1	3
.....	9.3	4	2	1,228	673	180	138	108	51	d. br.	d. br.	2	1
.....	9.3	4	2	1,314	706	192	151	125	63	r. br.	gr.	.....	.....
.....	9.6	4	2	1,175	593	175	142	118	52	d. br.	bl.	1	2
.....	9.6	4	5	1,286	697	187	145	120	61	br.	gr.	1	3
.....	9.6	4	3	1,274	678	194	147	116	66	d. br.	g. bl.	1	1
.....	9.7	4	3	1,290	655	195	144	121	62	d. br.	bl.	1	1
.....	9.2	3	3	1,281	670	190	144	120	66	d. br.	gr.	3	.....
.....	9.11	3	2	1,311	652	182	143	118	53	br.	br.	1	1
.....	9.1	3	2	1,195	638	186	140	116	51	br.	br.	2	1
.....	9.10	3	1	1,305	712	187	136	114	64	br.	gr.	4	1
.....	9.11	3	6	1,238	676	181	140	115	51	d. br.	br.	5	2
.....	9.6	2	1	1,276	681	188	143	115	56	d. br.	br.	.....	.....
.....	9.5	2	3	1,267	666	182	152	127	54	blo.	br.	1	1
.....	9.4	3	1	1,237	672	184	141	112	51	l. br.	gr.	.....	2
.....	9.8	3	4	1,335	733	192	145	125	69	br.	gr.	2	1
.....	9.2	2	1	1,241	650	176	140	110	48	br.	bl. gr.	.....	2
.....	9.10	5	2	.....	.....	.....	.....	.....	.....	.....	.....	1	2
.....	9.1	4	1	1,265	666	182	143	112	60	br.	br.	.....	.....
.....	9.7	4	2	1,241	673	174	156	119	58	blo.	bl.	1	1
.....	9.4	4	2	1,263	645	179	146	118	58	br.	bl.	1	1
.....	9.10	4	5	1,222	675	172	150	112	55	l. br.	g. bl.	4	5
.....	9.3	3	3	1,267	710	189	148	123	60	blo.	g. bl.	.....	1
.....	9.8	3	1	1,322	666	177	143	122	63	br.	br.	.....	1
.....	9.3	3	2	1,332	685	195	140	114	58	d. br.	d. br.	1	1
.....	9.5	3	1	1,261	664	182	150	116	59	blo.	gr.	1	1
.....	9.3	3	3	1,214	646	181	141	115	54	br.	l. br.	2	2
.....	9.9	2	2	1,296	732	185	145	117	61	d. blo.	bl.	1	1
.....	9.11	4	2	1,410	733	196	143	124	77	d. blo.	g. bl.	1	.....
.....	9.3	1	1	1,175	614	168	144	122	49	d. br.	gr.	3	2
.....	9.7	1	4	1,208	627	173	138	117	51	br.	d. br.	2	1
.....	9.11	5	1	1,319	.....	179	143	120	.....	d. br.	d. br.	1	.....
.....	9.8	5	1	1,405	.....	182	146	122	.....	blo.	bl.	.....	1
.....	9.6	5	2	1,276	.....	183	150	118	.....	blo.	gr.	.....	1
.....	9.11	4	3	1,345	.....	187	144	118	.....	l. br.	bl.	1	1
.....	9.3	4	3	1,344	.....	184	139	117	.....	d. br.	d. br.	2	6
.....	9.9	2	3	1,309	.....	175	145	126	.....	d. blo.	gr.	1	3
.....	9.5	3	1	1,314	.....	180	144	121	.....	d. br.	l. br.	.....	.....
.....	9.8	3	2	1,322	.....	180	138	123	.....	blo.	d. br.	.....	.....
.....	9.4	2	2	1,232	.....	184	155	142	.....	d. blo.	bl.	1	1
.....	9.10	1	3	1,213	.....	180	137	114	.....	d. br.	gr.	.....	.....
.....	9.9	2	4	1,230	.....	168	141	115	.....	d. br.	d. br.	1	4
.....	9.6	2	4	1,261	.....	180	141	116	.....	d. br.	d. br.	3	5
.....	9.5	3	2	1,328	.....	187	146	118	.....	d. br.	d. br.	1	1
.....	9.2	3	1	1,328	.....	185	140	118	.....	d. br.	bl.	.....	3
.....	9.8	4	2	1,307	.....	185	142	117	.....	.....	.....	.....	.....
.....	9.4	4	1	1,327	.....	185	144	118	.....	.....	.....	1	3
.....	9.4	4	1	1,363	726	185	153	121	.....	l. br.	l. br.	.....	1
.....	9.3	4	4	1,266	646	174	146	120	.....	d. br.	d. br.	2	1
.....	9.7	4	2	1,300	681	197	151	115	.....	d. br.	bl.	2	1
.....	9.3	4	2	1,275	635	184	142	109	.....	d. br.	bl.	1	.....
.....	9.8	4	2	1,335	713	182	141	117	.....	l. blo.	bl.	.....	.....
.....	9.9	4	5	1,375	.....	202	151	120	.....	d. blo.	d. br.	1	4
.....	9.7	4	1	1,354	.....	190	146	118	.....	d. br.	d. br.	.....	.....
.....	9.5	4	2	1,317	.....	182	145	121	.....	d. br.	d. br.	3	.....
.....	9.6	5	3	1,300	.....	177	151	116	.....	d. blo.	bl.	2	5
.....	9.9	5	4	1,315	.....	187	144	120	.....	d. blo.	bl.	1	2

## 9-year-old boys. Worcester, Mass.—Continued.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
160.....	9.4	4	3	1,172	.....	177	146	118	.....	l. br.	bl.	4	.....
161.....	9.6	2	2	1,330	725	181	147	120	72	d. br.	gr.	.....	.....
162.....	9.5	3	3	1,163	.....	175	137	108	.....	d. br.	l. br.	.....	.....
163.....	9.5	3	3	1,246	.....	176	144	119	.....	d. br.	gr.	.....	.....
164.....	9.6	3	1	1,258	.....	190	147	122	.....	d. br.	br.	1	.....
165.....	9.4	3	3	1,307	.....	172	143	121	.....	d. br.	l. br.	.....	.....
166.....	9.4	3	3	1,213	.....	176	136	114	.....	d. br.	bl.	.....	.....
167.....	9.6	4	10	1,325	705	183	146	119	64	r. blo.	bl.	.....	.....

## ADDITIONAL SERIES.

Number.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.	Number.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.
168.....	9.0	2	1,225	660	335	63	61	179.....	9.0	2	1,308	645	330	64	53
169.....	9.9	2	1,193	670	320	60	55	180.....	9.4	3	1,279	685	340	65	53
170.....	9.0	4	1,265	685	335	64	60	181.....	9.3	3	1,306	690	351	65	53
171.....	9.0	.....	1,201	665	320	64	.....	182.....	9.7	2	1,273	680	345	62	52
172.....	9.5	.....	1,175	635	305	56	43	183.....	9.7	3	1,266	668	346	55	55
174.....	9.1	4	1,256	770	360	63	64	184.....	9.10	3	1,223	665	325	54	54
175.....	9.3	4	1,363	725	380	68	73	185.....	9.1	2	1,223	665	335	56	58
176.....	9.0	4	1,246	675	335	61	52	186.....	9.11	4	1,240	678	333	58	58
177.....	9.0	2	1,275	690	330	65	55	187.....	9.10	3	1,351	710	360	59	58
178.....	9.0	2	1,306	710	355	71	61								

## REPEATED MEASUREMENTS.

Number in 8-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Width of hand.	Weight.	Number in 8-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Width of hand.	Weight.
1.....	9.10	5	1,229	656	346	64	56	51.....	9.11	.....	1,322	725	365	67	66
4.....	9.11	4	1,343	720	364	67	69	52.....	9.9	4	1,278	705	365	67	66
5.....	9.0	4	1,340	698	365	67	61	53.....	9.7	6	1,270	700	360	66	60
6.....	9.3	4	1,227	678	325	63	50	54.....	9.3	4	1,293	735	366	67	66
7.....	9.7	4	1,331	691	370	65	64	55.....	9.4	4	1,272	680	340	64	64
8.....	9.4	4	1,246	675	340	67	52	57.....	9.6	4	1,255	630	335	61	56
9.....	9.10	4	1,253	687	330	65	52	58.....	9.4	4	1,321	720	365	69	67
12.....	9.3	4	1,298	677	348	63	53	59.....	9.6	3	1,155	625	310	59	46
13.....	9.6	3	1,320	.....	.....	.....	.....	60.....	9.2	3	1,252	665	345	66	55
14.....	9.4	4	1,350	722	374	69	70	61.....	9.3	3	1,295	785	365	67	55
15.....	9.10	4	1,222	658	341	66	59	62.....	9.6	3	1,281	670	350	63	54
16.....	9.5	3	1,385	745	355	67	76	63.....	9.5	3	1,305	695	345	68	60
17.....	9.0	3	1,336	732	354	68	67	64.....	9.2	3	1,318	705	355	67	62
18.....	9.1	3	1,267	652	338	61	55	65.....	9.2	3	1,229	635	325	64	54
19.....	9.3	3	1,257	663	345	68	68	66.....	9.5	3	1,276	680	325	64	64
21.....	9.9	3	1,251	676	337	65	53	70.....	9.5	3	1,342	730	350	67	66
22.....	9.10	3	1,277	662	349	66	55	71.....	9.7	3	1,332	740	355	68	68
23.....	9.11	3	1,242	672	328	62	57	72.....	9.1	2	1,244	670	335	59	55
24.....	9.7	2	1,269	666	342	61	60	74.....	9.3	3	1,275	695	350	64	58
25.....	9.11	3	1,307	695	350	62	58	75.....	9.4	3	1,353	730	370	71	69
26.....	9.0	4	1,246	682	337	63	58	76.....	9.4	3	1,192	640	325	66	55
29.....	9.10	2	1,351	700	370	66	70	77.....	9.11	5	1,297	700	350	64	60
31.....	9.3	2	1,150	618	322	62	52	78.....	9.0	4	1,273	690	340	66	63
33.....	9.6	5	1,285	690	340	61	55	79.....	9.5	3	1,368	675	345	63	53
34.....	9.9	4	1,273	770	340	62	57	80.....	9.3	3	1,290	690	345	61	53
35.....	9.10	4	1,277	690	350	67	62	81.....	9.9	.....	1,198	.....	.....	.....	.....
37.....	9.4	4	1,212	650	330	67	55	82.....	9.7	3	1,342	705	360	66	66
38.....	9.10	3	1,297	715	355	68	68	83.....	9.1	3	1,296	680	325	62	63
39.....	9.9	4	1,302	680	355	65	60	84.....	9.11	4	1,310	700	350	65	58
42.....	9.6	3	1,340	740	355	70	98	85.....	9.9	4	1,198	640	325	63	56
44.....	9.11	3	1,237	675	340	64	52	86.....	9.6	4	1,295	705	355	69	64
45.....	9.4	3	1,200	655	330	63	53	89.....	9.4	3	1,259	680	350	66	56
46.....	9.8	3	1,222	725	345	64	60	91.....	9.4	2	1,213	640	330	67	57
49.....	9.10	4	1,296	700	350	64	62	92.....	9.6	4	1,306	685	345	65	53
50.....	9.9	4	1,325	710	380	62	64								

## 9-year-old boys. Worcester, Mass.—Continued.

## ADDITIONAL MEASUREMENTS.

Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.	Forearm.	Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.	Forearm.
131	1,335	104				150	1,406	151	103		
132	1,247	93				151	1,226	153	103		
133	1,228	95				152	1,303	100			
135		110	177			153	1,258	145	100		
136		97	152			154	1,315	150	104		
137		96	157			155		144	96		
138		100	182			156		157	105	66	
139		91	146			157		152	95	67	
140		92	160			158		148	94	68	
141		108	156			159		154	102	66	
142		98	180			160		146	94		
143		96	142			161	1,370	147	98	66	355
144		90	150			162		155	91	61	315
145		93	153			163		154	96	65	340
146		104	158			164		139	90	64	340
147		102	152			165		163	103	64	335
148		155	97	66		166		155	91	60	335
149		139	96	65							

## 10-year-old boys. Worcester, Mass.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
1.	10.11	6	2	1,390	747	180	146	117	67	d. br.	br.	1	2
2.	10.9	6	2	1,291	671	188	147	118	58	blo.	gr.	1	3
3.	10.7			1,309	763	188	142	121	76	br.	bl.	2	
4.	10.5	5	1	1,360	715	192	148	122	95	blo.	gr. bl.	2	2
5.	10.4	5	5	1,334	712	181	142	121	70	d. br.	bl.	6	1
6.	10.6	5		1,241	650	185	147	119	57	l. br.	g. bl.	3	3
7.	10.11			1,353	708	189	146	115	60	br.	bl.	1	2
8.	10.9	5		1,273	710	177	143	114	53	br.	d. br.	1	1
9.	10.9			1,370	736	179	145	121	74	d. br.	gr.	1	1
10.	10.7	5		1,332	749	181	146	120	63	d. br.	bl.	3	1
11.	10.10			1,331	728	179	148	119	61	d. br.	br.	1	1
12.	10.10			1,349	731	195	152	124	76	blo.	g. bl.	3	1
13.	10.7	5		1,348	720	181	141	123	69	br.	br.	1	1
14.	10.1			1,325	671	182	146	123	63	br.	br.	2	
15.	10.4			1,443	754	186	144	122	77	br.	g. bl.	2	2
16.	10.1	5	1	1,309	698	180	152	118	66	l. br.	bl.	2	2
17.	10.6	4		1,351	739	191	144	124	74	blo.	g. bl.	1	3
18.	10.3	4		1,269	677	180	145	119	55	blo.	gr.	1	3
19.	10.11			1,323	715	182	142	118	65	d. br.	gr.	6	2
20.	10.2			1,383	742	187	142	123	78	br.	br.	1	1
21.	10.2		3	1,297	691	192	139	116	65	blo.	bl.	1	2
22.	10.6			1,348	717	182	148	121	66	br.	gr.	2	
23.	10.11	3	4	1,265	682	179	142	112	64	d. br.	d. br.	3	
24.	10.8	4	4	1,364	736	190	153	124	86	blo.	bl.	1	4
25.	10.0		1	1,440	727	185			74	br.	gr.	1	2
26.	10.0	4	3	1,354	720	179	153	118	64	l. br.	l. br.	1	2
27.	10.0		2	1,283	705	180	138	117	62	l. br.	gr.	2	1
28.	10.9		1	1,318	713	181	146	126	73	blo.	gr.	1	1
29.	10.2	4	2	1,303	686	181	139	113	56	br.	br.	2	6
30.	10.2	4	1	1,354	715	186	146	116	60	rd.	gr.		
31.	10.11	4	2	1,219	642	177	141	117	56	d. br.	d. br.		1
32.	10.1	4	1	1,435	762	188	157	134	93	blo.	gr.	2	
33.	10.9	4	4	1,358	710	182	151	122	67	blo.	bl.	3	
34.	10.3	4	3	1,298	713	182	140	121	63	rd.	bl.	1	1
35.	10.1	3	2	1,436	766	190	145	123	82	br.	g. bl.		1
36.	10.2	3	2	1,369	748	179	157	131	75	l. br.	bl.	1	1
37.	10.4		2	1,368	738	185	149	124	67	br.	br.	1	1
38.	10.2		4	1,340	726	173	149	129	72	l. br.	bl.	2	3
39.	10.9	3	2	1,816		167	145	121	66	br.	g. bl.	1	2
40.	10.7		1	1,276	691	176	140	116	54	br.	bl.		5

\* Of twins.



## 10-year-old boys. Worcester, Mass.—Continued.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
41	10.6	6	5	1.291	681	179	138	120	59	br.	bl.	—	5
42	10.1	4	5	1.233	678	178	143	118	55	d. blo.	g. bl.	1	2
43	10.1	4	2	1.305	738	175	148	121	65	blo.	gr.	—	—
44	10.1	4	4	1.245	667	176	143	121	52	d. blo.	—	—	5
45	10.5	5	3	1.329	691	177	136	116	61	d. blo.	gr.	—	3
46	10.7	5	1	1.229	752	188	142	120	73	br.	gr. br.	2	—
47	10.5	5	1	1.294	694	181	140	118	63	br.	gr.	—	—
48	10.8	5	3	1.441	768	187	143	126	82	br.	bl.	—	3
49	10.9	5	2	1.423	727	177	146	123	71	blo.	l. br.	—	—
50	10.8	3	2	1.364	712	181	141	120	70	br.	br.	—	—
51	10.7	4	4	1.342	706	181	144	123	70	br.	gr.	—	2
52	10.7	3	3	1.350	738	186	155	121	69	l. br.	gr.	—	1
53	10.7	3	5	1.319	730	184	142	123	69	br.	br.	—	2
54	10.8	3	1	1.307	697	169	138	116	61	d. br.	g. bl.	—	3
55	10.0	2	3	1.280	666	184	138	119	56	br.	g. bl.	—	—
56	10.8	6	1	1.346	720	181	142	118	64	br.	g. bl.	—	—
57	10.5	6	2	1.455	783	182	145	122	101	br.	bl.	—	1
58	10.6	5	3	1.307	711	186	149	127	68	br.	d. br.	—	—
59	10.11	6	2	1.488	763	192	146	118	73	d. br.	d. br.	—	—
60	10.6	5	7	1.404	733	184	139	124	90	d. br.	d. br.	—	7
61	10.8	5	1	1.422	751	184	146	121	76	d. br.	bl.	—	—
62	10.2	5	3	1.399	750	179	143	121	73	br.	bl.	—	1
63	10.4	5	3	1.459	792	188	155	128	95	d. br.	l. br.	—	4
64	10.9	5	1	1.395	719	169	141	117	66	br.	br.	—	—
65	10.6	4	1	1.365	687	186	143	119	60	br.	bl.	—	—
66	10.7	5	3	1.301	720	178	145	122	61	br.	bl.	—	3
67	10.4	5	3	1.337	731	185	149	121	63	br.	bl.	—	2
68	10.8	4	4	1.363	694	174	144	115	60	br.	br.	—	2
69	10.10	4	1	1.341	744	180	138	113	67	d. blo.	br.	—	—
70	10.0	4	5	1.291	690	164	140	117	57	—	—	—	3
71	10.3	4	3	1.233	713	176	137	115	65	d. br.	bl.	—	1
72	10.2	4	8	1.320	720	183	145	119	64	d. br.	bl.	—	4
73	10.1	3	4	1.162	633	174	147	118	53	bla.	br.	—	2
74	10.0	3	—	1.348	731	180	144	115	65	d. br.	d. br.	—	—
75	10.3	3	4	1.218	675	178	148	117	56	br.	bl.	—	2
76	10.7	2	2	1.228	668	179	139	110	52	d. br.	br.	—	3
77	10.2	2	4	1.304	679	184	151	117	62	br.	bl.	—	—
78	10.7	5	5	1.301	696	182	147	117	69	d. blo.	bl.	—	4
79	10.6	5	3	1.384	745	181	146	119	66	br.	bl.	—	1
80	10.7	5	5	1.381	750	180	150	128	69	d. br.	gr.	—	—
81	10.7	5	1	1.331	721	187	147	122	65	d. br.	bl.	—	3
82	10.1	4	1	1.391	706	187	143	121	65	br.	bl.	—	—
83	10.7	4	1	1.313	694	185	145	119	59	br.	bl.	—	1
84	10.3	4	3	1.400	747	186	146	121	77	br.	br.	—	1
85	10.5	4	6	1.305	695	185	143	116	62	br.	br.	—	1
86	10.5	4	4	1.323	701	178	149	117	67	br.	bl.	—	3
87	10.6	3	2	1.325	681	177	145	122	59	d. br.	d. br.	—	—
88	10.6	3	2	1.306	696	183	139	114	59	d. blo.	bl.	—	—
89	10.9	3	3	1.276	675	189	145	120	67	l. br.	l. br.	—	5
90	10.1	2	1	1.299	700	180	143	122	65	d. br.	bl.	—	2
91	10.8	2	1	1.262	660	177	136	113	54	d. br.	d. br.	—	—
92	10.8	5	4	1.330	708	192	148	114	59	br.	d. bl.	—	2
93	10.1	5	2	1.312	728	190	145	117	65	br.	g. bl.	—	—
94	10.10	5	1	1.344	726	175	143	118	64	br.	gr.	—	1
95	10.8	5	1	1.265	688	165	140	113	51	br.	bl.	—	1
96	10.0	4	6	1.231	701	176	135	117	59	d. br.	d. br.	—	3
97	10.0	5	2	1.364	724	183	142	123	74	br.	bl.	—	—
98	10.3	4	2	1.334	741	181	146	121	70	br.	bl.	—	1
99	10.11	4	4	1.306	727	181	151	127	71	d. br.	d. br.	—	—
100	10.3	4	2	1.315	714	180	146	122	64	br.	gr.	—	1
101	10.0	3	2	1.348	695	185	143	122	69	d. br.	d. br.	—	1
102	10.1	3	1	1.352	713	175	148	126	60	d. br.	d. br.	—	—
103	10.2	3	1	1.280	640	189	141	116	55	br.	g. bl.	—	—
104	10.1	3	2	1.358	734	184	144	117	71	d. br.	d. br.	—	1
105	10.0	3	2	1.342	706	195	144	114	64	br.	d. br.	—	—
106	10.0	2	2	1.296	731	187	148	120	66	br.	br.	—	—
107	10.9	6	2	1.385	750	191	140	121	75	d. br.	gr.	—	1
108	10.10	5	4	1.340	715	187	146	117	72	br.	br.	—	—
109	10.2	5	2	1.245	659	179	139	117	54	blo.	bl.	—	—
110	10.0	4	1	1.346	676	188	137	112	62	br.	l. br.	—	—
111	10.2	4	1	1.349	710	185	143	117	63	blo.	bl.	—	—
112	10.9	4	4	1.314	681	178	144	115	61	blo.	g. bl.	—	—
113	10.5	4	4	1.322	715	171	149	121	66	l. br.	br.	—	—
114	10.3	4	3	1.395	728	183	148	125	75	d. blo.	l. br.	—	—
115	10.5	4	3	1.319	695	179	143	119	65	—	—	—	—
116	10.8	4	3	1.383	714	184	144	118	83	br.	gr. bl.	—	—
117	10.3	4	2	1.400	726	183	151	126	74	br.	br.	—	—

\* Half.

## STATISTICS OF GROWTH.

63

10-year-old boys. Worcester, Mass.—Continued.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
18.....	10.3	4	5	1,360	683	184	144	119	65	br.	bl.	1	3
19.....	10.6	4	2	1,379	703	192	147	121	68	br.	d. br.	1	3
20.....	10.0	3	1	1,374	723	184	147	126	78	br.	br.		
21.....	10.3	3	2	1,321	704	170	139	119	58	br.	bl.		1
22.....	10.4	3	1	1,293	670	187	148	122	57	d. blo.	l. br.		1
23.....	10.1	2	3	1,253	674	181	143	112	47	d. blo.	bl.	1	2
24.....	10.10	5	2	1,254		179	138	115		d. blo.	bl.	1	1
25.....	10.4	5	5	1,407		178	154	123		d. blo.	bl.	4	1
26.....	10.10	4	4	1,378		189	142	119		d. br.	bl.	2	1
27.....	10.10	3	1	1,373		178	151	127		rd.	bl.		
28.....	10.5	3	1	1,333		181	141	114		d. br.	d. br.		
29.....	10.10	3	3	1,385	742	174	144	117		d. blo.	d. br.		1
30.....	10.1	2	2	1,287		180	140	123		bl.	bl.	3	1
31.....	10.10	3	1	1,445		183	149	127		d. blo.	gr.		1
32.....	10.10	4	4	1,362		189	159	129				2	3
33.....	10.0	4	1	1,263		182	149	127		d. br.	d. br.	1	
34.....	10.2	4	2	1,304	734	180	142	120		d. br.	gr.	4	
35.....	10.7	4	5	1,360	701	176	141	116		d. br.	gr.	4	1
36.....	10.6	4	1	1,315	728	190	139	115		d. br.	bl.	1	
37.....	10.10	4	3	1,324	682	174	140	113		d. br.	gr.	2	1
38.....	10.11	4	1	1,409		175	142	124		d. br.	d. br.		
39.....	10.9	5	1	1,375		180	144	130		d. br.	l. br.	1	1
40.....	10.5	4	1	1,363		185	146	122		d. br.	bl.	2	1
41.....	10.11	4	3	1,341		183	141	115		d. br.	d. br.		2
42.....	10.1	5	1	1,281		187	138	119		d. blo.	gr.	1	
43.....	10.4	5	1	1,328	683	183	141	115		l. blo.	bl.	4	1
44.....	10.5	5	1	1,396		180	142	116		d. br.	g. bl.	2	2
45.....	10.2	5	1	1,252		179	150	125		d. br.	bl.	2	1
46.....	10.4	5	1	1,352		183	142	121		l. br.	g. bl.		1
47.....	10.7	5	3	1,405		183	142	120		d. br.	bl.	3	4
48.....	10.7	6	1	1,371		190	150	124		l. br.	l. br.		1
49.....	10.6	4	1	1,332		183	146	122		d. br.	gr.		1
50.....	10.5	4	1	1,245		182	146	122	61	d. br.	l. br.	1	1
51.....	10.0	3	1	1,252		173	144	119		l. br.	l. br.	2	2
52.....	10.8	4	1	1,307		188	140	119				1	
53.....	10.9	4	1	1,301		178	137	114		d. blo.	bl.		

## ADDITIONAL SERIES.

Number.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.	Number.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.
154.....	10.6	5	1,410	750	370	66	72	163.....	10.6	4	1,349		375	68	72
155.....	10.0	4	1,280	700	345	65	63	164.....	10.7	3	1,332	705	350	68	62
156.....	10.0	3	1,230	655	330	61	46	165.....	10.9	5	1,375	740	385	78	71
157.....	10.5	5	1,335	700	360	69	69	166.....	10.4	5	1,380	740	385	68	77
158.....	10.0		1,231	665	340	62	56	167.....	10.0	2	1,247	680	345	64	53
159.....	10.9	6	1,392	730	370	66	62	168.....	10.4	3	1,214	675	330	66	51
160.....	10.5	4	1,272	695	340	67	60	169.....	10.2	2	1,355	755	365	65	72
161.....	10.2	4	1,353	740	355	67	69	170.....	10.4	4	1,268	690	340	70	62
162.....	10.5	5	1,342	740	380	72	72	171.....	10.4	5	1,373	735	370	72	86

## 10-year-old boys. Worcester, Mass.—Continued.

## REPEATED MEASUREMENTS.

Number in 9-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.	Number in 9-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.
3	10.6	6	1,323	714	371	66	62	56	10.3	4	1,252	680	350	65	58
4	10.2	6	1,417	745	395	69	74	57	10.9	4	1,351	705	365	68	68
5	10.2	6	1,352	738	362	70	73	59	10.9	3	1,388	745	385	70	70
6	10.5	6	1,450	770	392	74	75	60	10.6	4	1,306	700	455	67	67
7	10.9	5	1,292	697	357	63	64	61	10.8	4	1,350	740	355	72	72
8	10.6	5	1,286	698	355	65	66	62	10.6	2	1,362	740	365	68	68
10	10.10	5	1,332	699	375	67	76	64	10.8	2	1,297	680	345	66	66
13	10.1	5	1,405	760	375	70	73	65	10.5	5	1,215	650	330	63	63
15	10.7	5	1,331	720	360	67	70	66	10.7	---	1,262	695	325	65	65
16	10.10	5	1,313	678	358	66	60	71	10.6	5	1,393	655	365	70	70
17	10.1	5	1,318	690	370	68	63	74	10.5	5	1,460	760	395	68	68
18	10.8	5	1,344	710	366	67	69	76	10.7	5	1,211	640	320	65	65
19	10.7	5	1,373	722	380	71	74	78	10.8	5	1,365	715	375	68	68
20	10.8	4	1,263	682	330	63	55	79	10.8	4	1,237	765	340	66	66
21	10.3	3	1,415	752	395	70	80	80	10.4	4	1,366	740	365	75	75
24	10.5	4	1,278	682	332	65	58	81	10.11	4	1,351	740	360	70	70
25	10.2	4	1,324	726	356	70	64	82	10.4	4	1,362	725	360	72	72
26	10.8	4	1,444	753	408	75	87	83	10.4	4	1,460	740	410	71	71
27	10.4	3	1,279	670	358	68	55	85	10.7	4	1,322	695	355	67	67
28	10.1	4	1,412	748	400	70	72	86	10.2	3	1,230	680	335	63	63
29	10.5	4	1,263	661	353	61	51	88	10.1	3	1,262	695	350	65	65
30	10.4	4	1,385	713	378	70	69	93	10.7	5	1,361	730	355	70	70
31	10.10	4	1,276	668	347	68	63	95	10.6	4	1,345	710	360	64	64
32	10.6	4	1,306	715	345	68	65	96	10.9	4	1,356	745	360	70	70
34	10.2	4	1,248	675	357	71	59	98	10.5	5	1,309	705	355	67	67
35	10.4	4	1,413	714	405	67	68	99	10.4	3	1,212	645	325	61	61
36	10.2	4	1,318	710	354	63	56	101	10.8	5	1,233	715	350	74	74
37	10.2	3	1,408	770	400	70	73	102	10.8	4	1,341	735	370	70	70
38	10.1	3	1,283	702	345	66	64	103	10.8	5	1,280	700	345	71	71
40	10.10	4	1,322	706	358	68	68	104	10.3	5	1,285	700	345	66	66
41	10.10	4	1,358	721	477	67	70	105	10.3	5	1,361	725	370	70	70
42	10.4	3	1,251	665	335	64	57	106	10.6	4	1,226	640	335	63	63
44	10.0	3	1,264	695	328	64	57	107	10.5	5	1,336	715	365	72	72
45	10.2	5	1,396	765	380	72	71	112	10.2	4	1,237	680	320	64	64
47	10.8	6	1,382	745	370	70	74	114	10.11	4	1,274	685	340	64	64
49	10.6	5	1,267	685	345	62	57	115	10.5	3	1,317	690	350	64	64
50	10.4	3	1,324	720	365	69	65	116	10.1	3	1,317	695	375	61	61
51	10.8	4	1,232	660	345	64	58	117	10.4	4	1,337	695	355	60	60
52	10.4	4	1,350	705	355	66	66	118	10.6	4	1,373	750	372	71	71
53	10.11	4	1,382	730	380	70	75	119	10.0	3	1,287	655	355	66	66
54	10.7	4	1,301	705	340	65	59								

## ADDITIONAL MEASUREMENTS.

Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.	Forearm.	Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.	Forearm.
126	---	101	155	---	---	140	---	162	102	71	---
127	---	104	157	---	---	141	---	155	94	64	---
128	---	99	148	---	---	142	---	158	91	67	---
129	---	112	162	---	---	143	---	154	91	68	---
130	---	100	153	---	---	144	---	144	91	65	---
131	---	102	149	---	---	145	---	159	91	65	---
132	---	163	98	71	---	146	---	155	94	67	---
133	---	157	95	74	---	147	---	156	97	68	---
134	1,403	153	102	---	---	148	---	160	111	69	---
135	1,380	151	105	---	---	149	---	161	100	72	366
136	1,373	155	111	---	---	150	---	152	96	71	366
137	1,306	160	96	---	---	151	---	149	96	65	366
138	---	157	100	69	---	152	---	---	---	65	366
139	---	141	91	69	---	153	---	157	97	68	366

## STATISTICS OF GROWTH.

65

11-year-old boys. Worcester, Mass.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
1	11.9		4	1,380	720	183	150	129	70	blo.	gr.	2	1
2	11.9		1	1,372	700	178	140	121	70	d. br.	g. bl.	1	
3	11.6		1	1,390	714	183	142	124	71	l. br.	g. bl.	2	
4	11.11	6	1	1,457	742	178	146	126	80	br.	bl.		3
5	11.1	6	2	1,447	765	180	145	123	78	r. br.	gr.	2	4
6	11.2	6	1	1,278	666	179	142	119	57	br.	br.	1	1
7	11.10	6	1	1,381	748	192	149	119	68	l. br.	br.	1	2
8	11.8		4	1,313	719	187	143	121	73	d. br.	gr. br.	1	3
9	11.9	6	8	1,371	732	192	148	121	75	d. br.	br.	1	6
10	11.3	6	2	1,461	750	183	154	131	78	d. br.	d. br.		3
11	11.10		5	1,445	742	181	146	126	80	br.	g. bl.	3	1
12	11.7		2	1,393	727	172	148	122	66	br.	bl.	2	3
13	11.2	5	4	1,435	737	177	143	121	77	blo.	gr.	1	2
14	11.7		2	1,421	747	190	145	121	70	br.	g. bl.		1
15	11.6	5	1	1,333	701	184	148	124	70	black.	d. br.		4
16	11.11		1	1,311	682	182	144	119	64	d. br.	d. br.		
17	11.1		3	1,408	728	190	142	120	75	blo.	g. yel.	1	1
18	11.6		1	1,297	708	187	147	125	70	blo.	bl.		
19	11.5	5	3	1,467	736	180	147	128	86	black.	d. br.	1	3
20	11.11	4	1	1,253	655	186	148	121	61	blo.	br.		
21	11.8	4	3	1,350	707	180	153	120	71	br.	gr.	3	2
22	11.6	5	1	1,266	671	180	142	116	56	br.	gr.		
23	11.9		2	1,296	687	177	149	119	65	d. br.	bl.	5	1
24	11.7		2	1,356	737	182	143	118	70	blo.	bl.	2	2
25	11.6		5	1,302	723	179	143	124	75	br.	br.	3	3
26	11.1	2	4	1,388	727	187	141	113	46 (?)	d. blo.	br.	3	
27	11.10		1	1,434	758	186	145	124	93	d. blo.	gr.	2	2
28	11.4	6	4	1,458	763	183	134	111	79	br.	br.	2	1
29	11.5	4	3	1,373	736	184	140	118	74	d. blo.	bl.	2	2
30	11.2	4	2	1,360	730	185	136	112	65	br.	bl.	1	2
31	11.3	5	3	1,289	669	171	135	113	57	d. blo.	gr. bl.	1	1
32	11.7	5	2	1,369	726	186	145	123	76	br.	gr. br.	1	1
33	11.5	5	3	1,330	681	175	139	118	63	br.	gr. br.	3	
34	11.2	5	4	1,282	685	187	145	124	64	blo.	bl.	4	1
35	11.3	5	3	1,439	750	186	153	123	76	br.	br.	3	2
36	11.10	5	5	1,446	791	178	141	122	80	bl.	br.	1	5
37	11.9	7	1	1,331	711	179	140	119	58	br.	br.		1
38	11.4	5	4	1,389	745	185	142	119	76	br.	br.	2	3
39	11.6	4	5	1,377	730	175	148	119	67	rd.	bl.	3	1
40	11.0	3	3	1,427	768	182	139	110	70	blo.	bl.	2	4
41	11.2	3	2	1,408	752	187	149	128	81	d. br.	bl.	2	5
42	11.3	3	4	1,341	717	178	139	116	60	br.	bl.	2	2
43	11.9	3	15	1,307	723	171	143	118	63	d. br.	br.	3	13
44	11.2	2	4	1,393	744	181	146	126	75	d. br.	gr. br.	3	3
45	11.0	2	7	1,269	719	177	144	118	61	br.	d. br.	3	3
46	11.0	2	1	1,240	673	171	144	116	55	d. blo.	gr. bl.		
47	11.9	7	1	1,603	823	193	154	140	94	rd.	gr.		
48	11.6	7	1	1,662	831	189	144	130	113	blo.	bl.	1	
49	11.2	6	2	1,346	705	180	147	120	66	br.	br.	1	
50	11.1	6	4	1,416	740	184	147	116	76	blo.	br.	1	2
51	11.0	5	4	1,383	745	188	138	116	70	blo.	bl.	3	1
52	11.4	5	5	1,285	682	184	138	113	63	br.	gr.	2	2
53	11.5	5	2	1,735	761	186	143	123	81	br.	br.	1	
54	11.9	5	4	1,531	791	188	146	127	90	blo.	bl.	1	2
55	11.0	5	10	1,406	741	174	145	123	74	br.	bl.	4	5
56	11.1	5	5	1,455	750	183	153	123	83	d. bl.	bl.	3	2
57	11.7	4	3	1,331	698	181	148	120	63	d. br.	gr. bl.	1	2
58	11.6	4	1	1,445	773	189	144	131	107	d. br.	lt. br.		
59	11.2	4	2	1,406	752	189	150	124	83	d. br.	bl.	4	2
60	11.11	3	2	1,380	707	180	140	115	78	blo.	bl.	1	2
61	11.0	3	1	1,350	702	175	139	114	67	blo.	bl.	3	4
62	11.6	7	5	1,304	663	172	144	120	65	br.	br.	3	3
63	11.9	7	5	1,465	754	187	151	129	85	blo.	bl.	3	1
64	11.9	6	4	1,441	771	194	140	119	118	blo.	gr.	1	2
65	11.5	6	2	1,342	648	179	146	116	64	br.	gr.	1	
66	11.7	6	4	1,384	704	187	151	122	63	br.	br.		3
67	11.3	5	5	1,372	717	191	150	125	73	br.	br.	5	1
68	11.3	5	3	1,356	719	179	137	115	64	br.	br.	2	
69	11.9	4	1	1,381	742	191	144	118	75	br.	bl.		
70	11.10	4	7	1,429	761	188	152	126	96	br.	br.	3	3
71	11.2	4	5	1,360	709	170	143	125	66	rd.	bl.		6
72	11.1	4	2	1,373	716	184	150	116	66	rd.	br.	1	5
73	11.9	4	2	1,371	738	181	139	121	72	br.	bl.	2	2
74	11.8	4	3	1,367	716	187	142	124	84	d. br.	lt. r.	3	
75	11.0	3	3	1,327	712	176	140	123	59	br.	lt. r.		2

## 11-year-old boys. Worcester, Mass.—Continued.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
76	11.3	3	1	1.314	707	170	149	121	64	dk. br.	dk. br.	5	2
77	11.0	3	6	1.332	710	190	135	117	64	br.	gr.	4	2
78	11.9	4	1	1.385	726	196	148	117	72	br.	gr.	1	1
79	11.2	3	1	1.305	678	183	141	114	56	br.	bl.	2	1
80	11.5	6	3	1.375	730	179	140	118	76	br.	bl.	1	2
81	11.8	6	6	1.382	730	190	141	119	69	br.	gr.	2	2
82	11.10	6	3	1.408	743	185	140	125	74	br.	gr. bl.	4	1
83	11.7	6	1	1.436	725	186	141	119	74	bla.	gr.	3	3
84	11.10	6	4	1.422	754	185	143	124	81	br.	gr.	1	1
85	11.6	6	2	1.464	724	190	151	130	89	lt. br.	bl.	2	1
86	11.11	6	2	1.308	720	187	145	125	63	br.	br.	1	1
87	11.6	6	5	1.282	672	180	147	125	69	br.	br.	4	1
88	11.11	6	2	1.379	713	179	149	127	68	br.	bl.	2	2
89	11.6	5	7	1.420	745	187	145	126	71	br.	gr.	3	3
90	11.6	5	2	1.503	677	182	148	118	59	br.	gr.	1	2
91	11.0	5	1	1.300	713	192	150	121	67	br.	br.	1	1
92	11.3	5	1	1.337	664	186	146	118	59	br.	gr.	3	1
93	11.3	5	4	1.347	722	202	151	122	82	br.	br.	3	1
94	11.0	4	3	1.285	689	189	140	119	67	br.	bl.	2	1
95	11.0	4	3	1.347	708	184	146	120	86	rd. br.	bl.	1	1
96	11.1	4	1	1.418	751	181	148	122	69	br.	br.	2	2
97	11.5	4	5	1.195	683	178	145	124	64	br.	gr. bl.	2	4
98	11.0	3	3	1.233	625	170	139	121	55	br.	gr. br.	1	1
99	11.11	3	9	1.345	695	185	144	125	76	br.	br.	4	4
100	11.6	5	1	1.380	688	184	137	118	62	br.	br.	1	1
101	11.0	3	1	1.265	692	180	137	111	56	blo.	gr. bl.	3	1
102	11.11	3	5	1.280	680	191	144	112	65	br.	gr.	4	2
103	11.6	6	4	1.374	755	182	153	127	74	br.	gr. bl.	2	2
104	11.7	6	2	1.434	739	187	149	116	70	br.	gr. bl.	4	2
105	11.1	6	2	1.328	714	180	148	117	64	blo.	gr.	1	1
106	11.7	6	1	1.351	679	172	141	115	60	blo.	gr.	1	2
107	11.9	5	1	1.376	701	188	139	124	74	br.	gr. bl.	1	1
108	11.8	5	1	1.372	707	178	139	117	65	dk. blo.	gr.	1	1
109	11.11	4	2	1.315	681	187	137	113	60	dk. blo.	br.	1	1
110	11.4	4	2	1.456	736	183	145	124	70	br.	bl.	1	1
111	11.5	4	1	1.414	772	186	147	118	71	br.	br.	1	1
112	11.0	4	2	1.330	670	188	145	122	61	br.	gr. bl.	1	1
113	11.6	3	2	1.344	653	181	144	120	66	lt. br.	lt. br.	2	1
114	11.2	3	2	1.334	698	184	142	118	66	br.	br.	1	1
115	11.6	3	7	1.382	.....	184	144	123	.....	dk. blo.	bl.	2	2
116	11.7	7	4	1.387	.....	197	141	118	.....	rd. br.	lt. br.	1	3
117	11.7	6	2	1.335	.....	193	141	113	.....	br.	gr.	1	1
118	11.4	5	4	1.347	.....	186	148	124	.....	dk. br.	gr. bl.	1	2
119	11.7	5	2	1.329	.....	182	131	114	.....	blo.	br.	1	2
120	11.3	5	7	1.287	.....	170	151	116	.....	dk. br.	bl.	4	1
121	11.1	3	1	1.367	.....	189	136	121	.....	blo.	gr.	1	1
122	11.8	4	2	1.423	.....	180	150	127	.....	blo.	bl.	1	2
123	11.9	4	2	1.325	716	181	151	123	.....	br.	bl.	2	2
124	11.11	4	4	1.438	764	170	151	124	.....	dk. br.	gr. bl.	3	1
125	11.8	4	6	1.366	705	184	147	115	.....	l. blo.	bl.	2	2
126	11.5	4	1	1.430	752	182	150	126	.....	l. br.	bl.	1	1
127	11.1	4	10	1.408	.....	185	151	128	.....	dk. br.	dk. br.	5	4
128	11.2	5	1	1.394	.....	187	145	122	.....	dk. blo.	bl.	1	1
129	11.0	5	7	1.385	.....	174	150	128	.....	dk. br.	bl.	1	5
130	11.1	5	6	1.362	.....	204	147	122	.....	lt. br.	lt. br.	4	1
131	11.10	5	1	1.451	.....	194	141	119	.....	dk. br.	bl.	1	1
132	11.4	5	2	1.286	.....	187	151	131	.....	lt. br.	lt. br.	1	3
133	11.10	6	3	1.383	.....	188	149	124	.....	blo.	bl.	2	4
134	11.10	6	2	1.382	.....	178	152	124	.....	dk. br.	dk. br.	2	1
135	11.11	6	1	1.345	.....	184	137	120	.....	lt. br.	lt. br.	2	1
136	11.1	6	1	1.405	.....	185	146	121	.....	lt. br.	bl.	1	1
137	11.6	6	1	1.600	.....	204	153	133	.....	dk. blo.	gr.	1	1
138	11.10	6	1	1.372	.....	173	151	125	.....	dk. blo.	gr.	2	1
139	11.8	7	3	1.485	.....	188	149	133	.....	dk. br.	dk. br.	2	3
140	11.7	7	3	1.341	703	188	151	131	.....	dk. br.	gr. br.	2	4
141	11.1	5	4	1.336	.....	185	147	121	.....	dk. br.	lt. br.	2	2
142	11.4	4	3	1.235	.....	180	146	117	.....	dk. br.	bl.	2	2
143	11.1	4	4	1.433	.....	182	144	118	.....	d. blo.	bl.	1	1
144	11.3	4	1	1.265	.....	176	140	114	53	d. blo.	gr.	1	1
145	11.8	4	2	1.356	.....	180	147	116	63	l. br.	l. br.	1	1
146	11.9	5	4	1.424	.....	189	139	120	.....	d. br.	l. br.	2	4
147	11.0	3	7	1.366	.....	185	144	123	.....	l. br.	bl.	5	1
148	11.6	3	2	1.247	.....	182	134	112	.....	l. br.	l. br.	2	3

\*Half sister.

## STATISTICS OF GROWTH.

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11-year-old boys. Worcester, Mass.—Continued.

## ADDITIONAL SERIES.

Number.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.	Number.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.
149	11.9	5	1,490	785	400	77	94	161	11.6	6	1,472	790	415	72	83
150	11.2	4	1,255	685	325	62	57	162	11.9	5	1,423	755	375	63	71
151	11.0	5	1,464	750	380	66	84	163	11.3	5	1,335	695	358	63	68
152	11.11	5	1,252	670	345	68	82	164	11.9	4	1,263	673	352	70	66
153	11.2	4	1,897	720	370	65	78	165	11.5	4	1,355	735	370	65	67
154	11.0	4	1,440	770	370	68	88	166	11.3	6	1,434	745	385	75	79
155	11.5	3	1,878	730	370	70	71	167	11.0	6	1,292	735	380	63	69
156	11.2	4	1,413	775	385	74	76	168	11.3	4	1,358	705	360	65	58
157	11.7	5	1,453	783	401	78	105	169	11.7	4	1,212	640	340	67	77
158	11.2	4	1,325	705	365	69	61	170	11.2	4	1,432	740	390	71	77
159	11.0	5	1,308	685	360	64	65	171	11.9	4	1,306	720	370	70	69
160	11.5	6	1,372	730	360	70	65	172	11.9	4	1,400	745	370	72	75

## REPEATED MEASUREMENTS.

Number in 10-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.	Number in 10-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.
1	11.11	7	1,487	768	383	68	77	50	11.9	4	1,419	740	407	72	76
2	11.10	7	1,389	694	385	68	60	52	11.7	4	1,390	765	370	70	76
4	11.5	6	1,414	731	398	68	70	53	11.7	4	1,360	765	375	70	76
5	11.10	6	1,421	770	380	67	82	54	11.8	4	1,352	720	360	68	60
6	11.6	6	1,283	675	365	64	63	58	11.6	6	1,368	740	375	68	77
7	11.4	6	1,406	738	396	69	71	61	11.3	5	1,467	760	390	72	79
9	11.9	6	1,426	771	375	71	87	62	11.1	6	1,442	765	390	72	75
10	11.7	5	1,371	755	367	66	73	63	11.4	6	1,514	820	400	74	110
12	11.7	6	1,366	755	380	70	81	64	11.4	5	1,453	750	390	71	69
13	11.7	6	1,390	730	382	70	74	65	11.1	5	1,314	700	360	68	66
14	11.0	6	1,385	723	390	71	79	66	11.7	---	1,340	720	355	67	66
15	11.5	6	1,491	786	395	69	89	67	11.4	6	1,383	745	370	70	69
16	11.1	6	1,371	723	370	67	72	68	11.9	5	1,315	700	350	62	67
17	11.5	5	1,408	868	378	77	84	69	11.11	5	1,403	765	375	76	73
18	11.2	5	1,320	703	360	65	59	70	11.1	5	1,342	705	370	68	60
19	11.11	5	1,361	745	370	68	77	74	11.2	4	1,401	765	370	72	71
21	11.3	5	1,340	715	355	64	76	77	11.3	3	1,364	705	365	70	62
22	11.5	5	1,408	752	400	67	73	78	11.7	6	1,345	715	380	71	73
24	11.8	5	1,424	774	392	72	107	82	11.2	5	1,340	720	380	65	72
25	11.1	5	1,463	750	425	69	79	85	11.1	---	1,367	740	360	72	---
26	11.0	5	1,418	757	382	67	64	86	11.4	5	1,357	725	380	65	71
27	11.0	5	1,332	720	350	66	70	87	11.7	4	1,362	710	370	66	64
28	11.10	5	1,362	725	385	72	79	88	11.6	4	1,350	710	360	66	60
30	11.2	5	1,414	730	375	66	64	91	11.8	3	1,301	680	360	65	61
31	11.11	5	1,261	686	336	67	62	93	11.1	2	1,362	745	370	66	70
32	11.1	5	1,496	796	412	73	115	94	11.10	6	1,392	750	360	71	81
33	11.8	5	1,421	732	389	72	74	96	11.11	4	1,273	705	345	67	61
35	11.1	4	1,496	796	408	73	90	97	11.0	6	1,420	750	385	70	82
36	11.3	4	1,452	776	405	79	81	98	11.4	4	1,386	755	370	69	67
37	11.4	4	1,417	760	385	72	76	99	11.11	5	1,365	770	360	73	82
39	11.9	4	1,359	730	465	65	70	100	11.4	5	1,360	745	360	69	68
42	11.1	5	1,280	690	340	64	60	101	11.0	3	1,384	745	380	70	75
43	11.2	5	1,417	765	380	71	69	102	11.1	4	1,396	755	385	68	67
44	11.3	5	1,295	685	340	67	57	103	11.3	4	1,333	700	365	69	60
47	11.5	6	1,329	725	350	63	68	105	11.0	4	1,382	735	360	68	68
49	11.11	6	1,472	760	400	74	76	106	11.9	3	1,354	730	365	74	72

## 11-year-old boys. Worcester, Mass.—Continued.

## ADDITIONAL MEASUREMENTS.

Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.	Forearm.	Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.	Forearm.
121		104	188			135		162	98	68	
122		150	95	69		136		160	100	72	
123	1,321	146	100			137		177	103	73	
124	1,486	108				138		158	113	76	
125	1,373	156	102			139		174	110	73	
126	1,427	165	108			140	1,342	158	101	66	
127		151	100	72		141		153	101	65	370
128		157	102	67		142		155	97	64	325
129		170	110	71		143		158	100	67	320
130		162	107	73		144		157	103	57	355
131		165	100	71		145		163	105	63	355
132		138	97	64		146		164	103	68	365
133		162	102	72		147		163	98	68	360
134		145	92	70		148		156	97	60	325

## 12-year-old boys. Worcester, Mass.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
1	12.3		3	1,477	758	186	151	124	83	br.	bl.	1	2
2	12.10		1	1,526	820	183	146	124	90	d. br.	d. br.		
3	12.2		1	1,545	803	187	153	128	176	bio.	bl.	1	1
4	12.11		1	1,520	776	176	143	126	86	br.	bl.	1	
5	12.8		4	1,503	772	193	145	121	86	bio.	bl.	1	3
6	12.6	7	4	1,473	748	187	144	125	88	br.	br.	3	
7	12.1	7	5	1,483	762	193	150	137	95	br.	gr.	1	2
8	12.9		2	1,550	799	183	148	130	89	br.	bl.	1	1
9	12.3		5	1,463	769	187	141	116	78	bio.	bl.	1	2
10	12.10		3	1,464	751	188	149	130	105	bio.	gr. bl.	2	2
11	12.11		4	1,600	837	183	141	125	101	br.	gr.	1	1
12	12.4		3	1,581	830	190	144	130	110	br.	bl.	1	1
13	12.8		2	1,378	716	180	151	133	78	bio.	br.	1	1
14	12.7		2	1,438	755	182	155	131	88	d. br.	bl. gr.	1	1
15	12.1		1	1,450	749	186	150	121	80	br.	bl.	1	
16	12.11		1	1,371	711	188	147	121	76	l. br.	l. bl.		
17	12.10		2	1,490	747	183	147	119	81	l. br.	br.		
18	12.10	6	2	1,513	801	192	148	126	88	r. br.	bl.	1	1
19	12.4	6	3	1,530	714	182	140	112	63	l. br.	bl.	1	1
20	12.7	6	1	1,377	731	191	145	119	74	bio.	g. bl.	2	2
21	12.3	6	2	1,317	680	184	150	120	55	br.	br.		1
22	12.5	6	1	1,464	785	183	145	121	96	l. br.	bl.		1
23	12.0		4	1,405	730	187	154	130	74	br.	l. br.		3
24	12.5		3	1,376	737	175	141	115	72	d. br.	l. br.	2	3
25	12.7	6	3	1,369	723	173	143	122	70	l. br.	br.	2	1
26	12.6		3	1,244	667	182	135	113	58	l. br.	gr.	2	2
27	12.0	5	2	1,428	737	188	146	121	70	d. br.	d. br.	2	
28	12.4		1	1,384	710	170	140	117	62	d. br.	g. bl.		
29	12.9	5	3	1,354	692	187	156	126	71	br.	bl.	2	
30	12.4		1	1,482	760	179	150	123	88	l. br.	gr.		
31	12.2	4	1	1,450	743	181	146	118	87	l. br.	bl.	1	
32	12.5		2	1,620	831	188	147	126	110	d. br.	gr.	1	2
33	12.10	4	7	1,385	697	190	144	120	70	bio.	br.	1	
34	12.2		7	1,376	734	181	142	119	72	br.	bl.	4	5
35	12.7		5	1,309	725	176	150	125	72	r.	gr.	3	4
36	12.1		4	1,373	743	179	154	133	81	d. br.	d. br.	3	4
37	12.11	6	3	1,403	732	180	143	118	70	bio.	bl.		2
38	12.0	6	1	1,507	772	182	152	126	89	br.	br.		1
39	12.3	6	1	1,489	770	183	143	124	83	br.	l. br.		2
40	12.0	6	1	1,389	732	186	152	125	74	bio.	bl.		1
41	12.1	6	2	1,497	818	185	149	128	92	l. br.	br.	3	2
42	12.11	6	1	1,354	700	179	146	121	75	l. br.	bl.	1	
43	12.9	4	1	1,380	722	175	151	124	67	d. br.	br.		2
44	12.9	4	1	1,504	771	190	143	125	80				
45	12.0	6	1	1,356	704	183	140	122	64	bl.	gr.	1	2
46	12.10	6	1	1,479	779	179	151	123	83	l. br.	l. br.	2	1
47	12.2	5	2	1,439	751	185	149	122	76	br.	gr.	1	1

12-year-old boys. Worcester, Mass.—Continued.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
48	12.4	5	3	1,465	747	183	145	123	86	r.	bl.	3	---
49	12.10	5	1	1,493	743	181	137	122	82	blo.	gr.	1	---
50	12.0	7	5	1,852	695	174	137	123	68	br.	bl.	3	---
51	12.4	7	8	1,407	716	180	135	116	68	br.	gr.	1	2
52	12.7	7	1	1,238	766	187	155	125	91	blo.	gr.	2	---
53	12.10	7	2	1,482	784	196	145	125	87	br.	bl.	2	1
54	12.5	7	3	1,468	744	193	146	120	76	blo.	bl.	2	---
55	12.5	5	1	1,370	723	186	144	122	65	br.	bl.	2	3
56	12.1	4	1	1,406	719	179	141	127	71	blo.	br.	1	1
57	12.11	5	1	1,488	756	191	151	133	94	blo.	gr.	2	2
58	12.10	5	2	1,450	795	185	164	131	82	blo.	bl.	2	1
59	12.10	5	1	1,467	778	178	151	126	84	blo.	bl.	---	---
60	12.11	5	6	1,436	760	172	153	126	71	bla.	d. br.	3	2
61	12.11	4	1	1,462	785	172	152	124	73	br.	bl.	---	---
62	12.8	8	5	1,467	765	192	148	123	91	blo.	l. br.	3	3
63	12.4	7	7	1,946	689	172	136	113	66	br.	gr.	5	4
64	12.9	7	3	1,303	690	175	144	112	58	l. blo.	gr.	1	1
65	12.5	6	3	1,888	722	178	149	124	74	blo.	bl.	4	2
66	12.2	6	1	1,360	715	186	141	114	81	br.	bl.	---	2
67	12.10	6	1	1,376	730	168	143	120	73	d. br.	bl.	1	---
68	12.11	6	2	1,515	805	185	145	120	90	blo.	bl.	1	1
69	12.11	6	2	1,443	750	185	151	118	80	bla.	gr.	1	1
70	12.8	6	3	1,355	724	186	143	116	73	br.	gr.	---	2
71	12.10	6	2	1,390	730	190	145	116	68	br.	gr.	1	2
72	12.7	6	2	1,443	720	186	140	112	73	d. br.	gr.	1	2
73	12.6	6	2	1,342	710	176	139	106	62	blo.	gr.	---	1
74	12.9	6	5	1,408	767	182	143	116	73	bla.	bl.	3	3
75	12.8	6	4	1,420	736	180	139	124	75	d. br.	bl.	---	3
76	12.1	6	4	1,460	788	176	147	115	72	d. br.	bl.	2	1
77	12.10	6	1	1,478	774	185	140	112	82	r. br.	br.	---	---
78	12.5	5	3	1,368	745	191	155	121	75	br.	br.	2	2
79	12.7	5	1	1,433	717	192	143	122	71	d. br.	br.	2	1
80	12.4	5	3	1,464	750	174	136	118	73	blo.	bl.	1	1
81	12.8	5	3	1,453	769	178	136	124	80	br.	gr.	3	---
82	12.10	5	3	1,515	777	187	148	122	93	br.	gr.	4	2
83	12.1	4	2	1,374	754	182	143	114	73	br.	br.	---	1
84	12.3	4	2	1,360	733	181	143	121	65	r. br.	bl.	2	2
85	12.6	4	3	1,353	706	178	152	122	67	br.	bl.	4	2
86	12.6	8	6	1,500	780	199	156	129	95	d. br.	br.	3	3
87	12.5	4	4	1,463	750	184	144	126	81	blo.	bl.	3	1
88	12.10	7	2	1,481	753	187	159	138	88	r. blo.	br.	1	---
89	12.2	7	4	1,397	716	182	148	126	74	br.	bl.	1	2
90	12.5	7	3	1,401	735	191	149	127	70	br.	br.	2	---
91	12.2	7	2	1,451	754	178	147	124	83	d. br.	gr.	1	---
92	12.4	7	2	1,365	698	180	138	116	57	br.	bl.	1	4
93	12.8	6	2	1,490	804	192	148	124	84	br.	bl.	1	4
94	12.10	7	2	1,401	721	183	142	113	67	br.	d. br.	---	1
95	12.3	4	6	1,371	710	179	145	116	73	br.	bl.	1	6
96	12.4	4	3	1,338	704	186	146	120	71	d. br.	l. br.	2	---
97	12.11	7	3	1,407	735	189	150	123	81	br.	br.	---	2
98	12.11	7	11	1,410	727	170	140	115	76	br.	gr.	6	5
99	12.4	7	3	1,307	675	185	147	118	71	br.	d. br.	---	---
100	12.5	7	1	1,350	730	185	151	119	71	br.	gr.	2	---
101	12.10	7	2	1,416	749	193	150	126	77	d. br.	bl.	1	2
102	12.5	7	4	1,438	759	181	155	130	78	r. br.	gr.	3	3
103	12.1	7	7	1,498	785	176	150	118	80	br.	bl.	4	2
104	12.7	7	3	1,435	758	175	140	117	75	br.	bl.	5	3
105	12.11	6	2	1,344	705	174	144	121	60	d. br.	bl.	6	3
106	12.2	6	1	1,571	836	189	147	130	107	blo.	bl.	---	---
107	12.8	6	2	1,434	764	184	142	122	85	blo.	bl.	1	---
108	12.9	9	5	1,482	775	195	148	126	96	br.	br.	1	3
109	12.7	8	2	1,392	757	185	142	116	75	l. br.	bl.	3	3
110	12.8	8	3	1,408	753	194	149	128	83	br.	bl.	3	---
111	12.11	8	4	1,387	724	191	141	122	70	d. br.	gr.	1	2
112	12.1	5	3	1,418	765	175	145	125	77	l. br.	bl.	---	5
113	12.2	5	4	1,399	755	180	133	114	68	d. br.	d. br.	---	3
114	12.10	5	4	1,406	796	178	136	115	68	br.	gr.	4	---
115	12.7	5	8	1,440	759	174	148	127	78	d. br.	gr.	1	1
116	12.11	5	2	1,367	742	172	149	129	68	l. br.	gr. bl.	1	---
117	12.1	5	4	1,336	707	175	139	119	66	d. br.	gr.	5	3
118	12.11	5	1	1,470	754	176	139	123	85	br.	bl.	1	---
119	12.0	3	3	1,349	694	184	144	125	64	d. br.	br.	3	2
120	12.10	8	5	1,442	743	193	155	133	79	br.	gr.	1	6
121	12.9	8	2	1,424	755	180	141	121	75	blo.	gr. bl.	5	---
122	12.10	8	4	1,611	845	190	162	135	130	blo.	gr. bl.	2	2
123	12.11	8	2	1,401	730	186	146	124	74	blo.	gr.	---	2
124	12.8	8	3	1,393	723	185	148	125	67	br.	bl.	3	1
125	12.5	7	1	1,435	734	183	144	128	85	blo.	bl.	1	---
126	12.10	7	2	1,438	752	173	139	120	80	blo.	gr.	4	---



## 12-year-old boys. Worcester, Mass.—Continued.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
127.....	12.8	7	2	1,449	760	182	141	125	73	blo.	bl.	2	3
128.....	12.9	7	1	1,454	764	179	138	124	79	blo.	bl.	1	1
129.....	12.4	7	2	1,505	788	188	145	121	82	blo.	bl.	1	1
130.....	12.4	7	1	1,534	781	179	149	125	90	br.	br.	3	2
131.....	12.9	7	8	1,417	752	176	141	119	71	blo.	gr. bl.	4	4
132.....	12.3	7	1	1,356	730	179	139	118	64	blo.	bl.	1	1
133.....	12.4	7	1	1,417	728	180	148	123	72	blo.	bl.	1	1
134.....	12.4	6	1	1,408	724	187	146	125	72	blo.	br.	2	1
135.....	12.10	6	1	1,426	738	175	136	116	75	br.	gr.	2	1
136.....	12.5	5	3	1,449	762	182	137	115	70	blo.	l. br.	3	2
137.....	12.11	5	2	1,390	708	189	130	110	70	blo.	gr.	1	1
138.....	12.3	5	1	1,342	712	177	138	122	58	blo.	gr.	2	2
139.....	12.5	5	2	1,469	708	185	144	120	83	r. br.	l. br.	2	1
140.....	12.11	5	4	1,466	778	179	150	127	74	br.	l. br.	2	1
141.....	12.10	5	3	1,439	771	182	147	122	80	blo.	gr. bl.	1	1
142.....	12.3	4	6	1,406	740	189	143	123	76	br.	gr.	2	3
143.....	12.6	4	4	1,533	714	188	150	122	77	r. blo.	bl.	4	6
144.....	12.2	3	6	1,440	703	189	149	122	66	.....	.....	2	2
145.....	12.8	2	1	1,464	762	183	136	121	82	br.	l. br.	1	1
146.....	12.3	.....	2	1,467	736	180	145	130	.....	blo.	gr. bl.	1	1
147.....	12.11	.....	3	1,555	699	182	134	118	.....	br.	br.	1	2
148.....	12.9	.....	2	1,559	792	197	138	125	.....	br.	l. br.	2	1
149.....	12.6	.....	2	1,554	.....	182	147	123	.....	d. br.	l. br.	2	1
150.....	12.8	7	1	1,480	.....	181	142	124	.....	d. br.	d. br.	1	1
151.....	12.6	7	1	1,516	.....	193	139	127	.....	blo.	bl.	1	2
152.....	12.0	7	3	1,477	.....	193	147	120	.....	blo.	bl.	2	2
153.....	12.7	7	6	1,529	.....	192	150	130	.....	blo.	bl.	3	3
154.....	12.10	7	7	1,509	.....	190	147	126	.....	d. br.	gr.	3	3
155.....	12.1	6	4	1,440	.....	188	150	126	.....	blo.	bl.	3	1
156.....	12.4	5	2	1,414	.....	182	151	125	.....	blo.	bl.	1	2
157.....	12.9	7	1	1,602	.....	185	143	122	.....	blo.	gr.	2	2
158.....	12.6	7	5	1,507	.....	186	148	134	.....	r. br.	d. br.	2	3
159.....	12.3	4	8	1,493	755	181	156	128	.....	d. br.	bl.	3	2
160.....	12.1	4	4	1,447	736	184	152	130	.....	d. br.	gr.	3	2
161.....	12.4	5	1	1,463	.....	183	150	128	.....	d. br.	gr.	1	1
162.....	12.5	5	5	1,427	.....	183	149	123	.....	l. br.	bl. gr.	3	1
163.....	12.3	5	5	1,444	.....	183	141	119	.....	d. br.	bl.	1	1
164.....	12.10	6	5	1,388	.....	179	145	125	.....	l. br.	bl.	5	3
165.....	12.6	6	3	1,332	.....	178	141	117	.....	d. br.	bl. gr.	2	3
166.....	12.1	6	3	1,382	.....	178	147	121	.....	d. blo.	gr.	2	2
167.....	12.5	7	1	1,491	759	183	145	125	.....	d. blo.	bl.	1	1
168.....	12.3	7	.....	1,347	716	179	145	118	.....	br.	bl.	1	1
169.....	12.9	8	1	1,438	728	188	148	125	.....	d. br.	bl.	1	1
170.....	12.1	8	2	1,426	760	185	150	122	.....	r.	bl.	1	1
171.....	12.9	8	5	1,573	851	193	141	120	.....	d. br.	d. br.	3	3
172.....	12.5	9	1	1,371	710	184	144	120	68	d. br.	d. br.	2	1
173.....	12.0	8	2	1,525	.....	207	153	127	93	d. blo.	bl.	1	2
174.....	12.10	5	2	1,433	.....	183	154	132	.....	d. br.	gr.	3	3
175.....	12.11	5	.....	1,423	755	182	143	120	80	.....	.....	.....	.....

## ADDITIONAL SERIES.

Number.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.	Number.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.
176.....	12.7	5	1,368	740	365	70	65	190.....	12.8	.....	1,381	720	370	70	69
177.....	12.4	5	1,462	775	385	66	76	191.....	12.11	6	1,449	760	400	74	86
178.....	12.7	4	1,305	710	340	68	65	192.....	12.8	6	1,424	760	395	70	72
179.....	12.11	8	1,393	720	375	68	74	193.....	12.7	6	1,253	665	350	67	64
180.....	12.7	6	1,482	785	400	71	79	194.....	12.11	5	1,386	740	395	66	63
181.....	12.6	7	1,336	710	360	68	61	195.....	12.10	5	1,520	825	415	83	99
182.....	12.11	7	1,440	755	390	68	79	196.....	12.4	4	1,377	740	380	66	52
183.....	12.11	7	1,486	780	400	76	97	197.....	12.7	5	1,345	700	365	66	61
184.....	12.8	5	1,425	765	380	76	80	198.....	12.6	6	1,445	775	385	70	72
185.....	12.11	7	1,522	775	470	70	75	199.....	12.11	7	1,392	720	375	68	66
186.....	12.6	6	1,487	800	390	77	91	200.....	12.2	5	1,322	670	385	63	58
187.....	12.10	5	1,400	750	380	74	70	201.....	12.5	4	1,510	820	400	76	113
188.....	12.6	7	1,504	800	400	77	117	202.....	12.1	4	1,448	750	385	70	73
189.....	12.4	4	1,441	740	390	66	74	203.....	12.11	6	1,423	749	400	77	89

# STATISTICS OF GROWTH.

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12-year-old boys. Worcester, Mass.—Continued.

## REPEATED MEASUREMENTS.

Number in 11-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.	Number in 11-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.
1	12.8	8	1,422	734	371	75	75	53	12.5	6	1,492	765	415	73	88
2	12.9	8	1,433	778	386	75	74	54	12.9	6	1,577	780	420	76	103
4	12.11	7	1,521	780	407	81	88	55	12.1	5	1,456	765	395	70	79
6	12.3	7	1,323	708	361	64	61	56	12.2	7	1,510	800	400	75	91
8	12.8	7	1,364	744	367	67	88	57	12.3	5	1,385	720	395	72	70
9	12.8	7	1,423	756	398	74	80	58	12.1	5	1,540	830	420	82	116
10	12.4	7	1,522	785	425	72	86	60	12.11	4	1,436	745	400	76	82
11	12.10	7	1,522	811	420	73	94	61	12.11	4	1,396	725	375	70	71
12	12.7	6	1,447	758	392	66	72	62	12.8	8	1,333	690	360	69	68
14	12.10	5	1,462	780	400	66	78	63	12.10	8	1,531	810	410	77	94
15	12.7	6	1,382	730	380	70	77	64	12.8	7	1,470	815	425	80	135
17	12.0	6	1,462	754	395	70	84	65	12.4	7	1,385	710	390	71	70
18	12.5	6	1,333	725	376	69	74	66	12.8	7	1,425	735	400	70	66
20	12.11	4	1,343	688	380	68	70	68	12.4	6	1,404	770	370	69	67
22	12.6	6	1,305	687	365	67	63	69	12.10	5	1,416	745	380	75	77
23	12.9	5	1,348	711	378	70	70	72	12.1	5	1,416	740	380	71	74
24	12.7	5	1,390	750	390	68	76	73	12.8	5	1,401	760	380	73	76
25	12.5	5	1,346	732	365	68	76	74	12.5	5	1,420	765	415	73	101
26	12.1	3	1,433	734	380	68	71	77	12.0	4	1,384	735	380	71	73
27	12.8	3	1,477	780	415	76	103	78	12.9	5	1,424	755	390	71	75
28	12.8	7	1,500	780	410	75	96	80	12.6	7	1,497	755	380	71	75
29	12.3	5	1,442	790	395	70	80	81	12.7	7	1,419	755	390	72	78
31	12.3	6	1,310	700	355	65	60	82	12.11	7	1,454	775	385	74	85
32	12.7	6	1,428	755	390	72	84	83	12.7	7	1,477	755	400	75	82
33	12.5	6	1,410	750	385	74	74	84	12.10	8	1,475	785	400	82	94
34	12.2	6	1,326	710	355	68	69	85	12.6	7	1,518	780	420	76	96
36	12.11	6	1,492	810	400	76	86	86	12.11	7	1,346	740	380	70	69
37	12.10	8	1,390	720	360	65	63	87	12.7	7	1,330	720	350	73	80
38	12.4	6	1,450	765	390	73	84	89	12.6	5	1,464	760	400	72	76
39	12.6	5	1,422	755	385	65	71	94	12.11	5	1,333	715	380	70	71
43	12.9	2	1,342	735	370	70	66	96	12.1	5	1,472	775	385	68	78
45	12.1	2	1,332	740	365	69	68	99	12.11	3	1,386	720	400	75	78
49	12.3	7	1,389	720	370	72	71	102	12.11	---	1,307	715	380	71	76
50	12.1	7	1,467	760	390	76	81	107	12.8	6	1,416	750	380	72	81
51	12.0	6	1,452	765	385	71	73	112	12.0	5	1,381	730	380	72	69
52	12.11	5	1,351	710	360	69	70								

## ADDITIONAL MEASUREMENTS.

Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.	Forearm.	Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.	Forearm.
157		117	165			181				68	360
158		109	167			182				68	390
159	1,495	105	148			183				76	400
160	1,475	100	151			184				76	380
161		101	159			185				70	470
162		98	144	71		186				77	390
163		98	149	74		187				74	390
164		106	159	71		188				77	400
165		99	148	68		189				66	390
166		100	150	67		190				70	370
167		97	158	73		191				74	400
168		94	145	65		192				70	395
169		107	156	71		193				67	350
170		101	153	69		194				66	395
171		107	164	73		195				83	415
172		96	154	73	380	196				66	390
173		111	181	76	420	197				66	365
174		107	168	71	390	198				70	385
175		102	155	67	378	199				68	375
176				70	365	200				63	385
177				66	385	201				76	400
178				68	340	202				70	385
179				68	375	203				77	400
180				71	400						

## 13-year-old boys. Worcester, Mass.—Continued.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
159.....	13.9	5	6	1,384	.....	194	145	122	.....	d. blo.	bl.	3	2
160.....	13.11	5	5	1,458	.....	173	145	118	.....	d. br.	gr.	1	3
161.....	13.7	7	2	1,490	.....	182	140	120	.....	l. br.	bl.	2	1
162.....	13.2	7	4	1,374	715	180	143	121	.....	d. br.	bl.	2	1
163.....	13.2	.....	2	1,414	722	187	155	132	.....	d. br.	l. br.	1	1
164.....	13.0	7	3	1,415	737	170	144	126	.....	d. br.	bl.	1	1
165.....	13.6	8	1	1,451	752	182	147	121	.....	l. br.	bl.	1	1
166.....	13.6	8	2	1,470	768	181	146	123	.....	d. br.	l. br.	3	1
167.....	13.11	8	1	1,528	744	193	151	130	.....	l. br.	bl.	1	1
168.....	13.11	8	1	1,500	770	193	147	128	81	br.	br.	2	1

## ADDITIONAL SERIES.

Number.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.	Number.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.
169.....	13.6	7	1,457	745	397	69	77	173.....	13.7	8	1,288	690	365	72	59
170.....	13.1	7	1,368	735	380	71	65	174.....	13.4	8	1,472	755	365	72	63
171.....	13.5	7	1,681	897	478	87	168	175.....	13.6	8	1,560	790	425	71	83
172.....	13.4	6	1,555	810	448	80	101								

## REPEATED MEASUREMENTS.

Number in 12-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.	Number in 12-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.
3.....	13.3	9	1,613	864	470	84	138	81.....	13.11	5	1,552	945	.....	.....	168
4.....	13.10	9	1,590	816	435	77	100	82.....	13.8	9	1,542	800	435	82	105
5.....	13.8	8	1,571	796	432	82	97	83.....	13.4	.....	1,392	710	380	70	70
6.....	13.6	8	1,573	810	448	84	112	84.....	13.10	.....	1,352	685	355	68	63
7.....	13.0	8	1,555	798	428	73	112	85.....	13.11	7	1,427	745	380	78	79
8.....	13.8	.....	1,632	837	.....	.....	106	86.....	13.11	7	1,606	840	450	84	108
9.....	13.6	8	1,528	791	412	76	84	87.....	13.4	7	1,449	740	375	68	72
10.....	13.10	8	1,514	788	422	77	112	88.....	13.8	7	1,465	745	385	74	81
12.....	13.4	8	1,701	915	465	89	131	89.....	13.9	7	1,450	770	390	73	76
15.....	13.2	7	1,498	778	402	72	91	90.....	13.7	7	1,452	740	410	76	82
16.....	13.10	7	1,468	767	405	76	89	91.....	13.4	7	1,525	810	400	73	79
17.....	13.11	8	1,576	790	435	75	92	92.....	13.11	7	1,564	830	420	75	97
19.....	13.5	7	1,377	745	360	72	66	93.....	13.6	6	1,416	765	400	75	81
20.....	13.5	7	1,423	858	376	68	82	94.....	13.6	6	1,478	745	365	72	75
21.....	13.3	7	1,373	713	374	66	61	95.....	13.4	5	1,515	790	420	71	80
22.....	13.5	7	1,512	820	415	76	128	96.....	13.4	8	1,502	785	385	77	89
23.....	13.1	7	1,452	753	401	74	81	97.....	13.2	8	1,445	765	390	73	82
24.....	13.6	6	1,417	750	384	70	76	98.....	13.4	8	1,432	750	380	71	71
25.....	13.7	6	1,413	745	390	67	75	99.....	13.2	8	1,508	775	410	75	86
26.....	13.6	6	1,294	690	350	68	61	100.....	13.10	8	1,451	740	390	66	74
27.....	13.10	8	1,372	710	355	69	73	101.....	13.4	5	1,421	765	400	72	83
28.....	13.7	5	1,450	735	380	71	76	102.....	13.11	8	1,494	785	415	81	102
29.....	13.8	6	1,402	730	390	64	78	103.....	13.0	6	1,480	770	380	68	76
31.....	13.2	5	1,507	780	415	78	96	104.....	13.5	8	1,407	750	380	74	82
38.....	13.2	7	1,566	800	420	74	100	105.....	13.5	.....	1,519	800	410	77	90
39.....	13.3	7	1,562	806	431	78	92	106.....	13.8	8	1,496	795	405	79	85
41.....	13.0	7	1,572	860	420	80	108	107.....	13.9	8	1,519	810	420	80	101
44.....	13.2	5	1,561	806	425	74	89	108.....	13.8	9	1,433	790	380	75	78
45.....	13.1	7	1,405	735	380	67	68	109.....	13.6	6	1,462	775	390	74	86
46.....	13.10	7	1,561	825	425	80	100	110.....	13.3	6	1,452	770	390	73	72
47.....	13.2	6	1,502	795	400	74	86	111.....	13.10	6	1,472	770	385	69	73
48.....	13.8	6	1,559	840	405	76	102	112.....	13.7	6	1,466	760	390	73	84
49.....	13.9	6	1,547	770	425	77	86	113.....	13.2	6	1,400	740	380	71	77
51.....	13.5	8	1,452	750	390	67	71	114.....	13.10	9	1,500	775	405	75	86
52.....	13.8	8	1,494	815	410	75	102	115.....	13.10	9	1,585	895	435	85	140
53.....	13.11	8	1,516	810	415	77	95	116.....	13.11	9	1,481	770	400	76	85
54.....	13.6	8	1,516	779	420	76	80	117.....	13.8	9	1,432	745	370	69	71
56.....	13.1	5	1,450	765	390	70	77	118.....	13.3	5	1,448	790	370	75	85
58.....	13.8	6	1,506	825	405	81	93	119.....	13.2	4	1,383	750	380	68	74

STATISTICS OF GROWTH.

75

13-year-old boys. Worcester, Mass.—Continued.

ADDITIONAL MEASUREMENTS.

Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.	Forearm.	Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.	Forearm.
127	1,576	108				150		101	167	71	
128	1,553	100				160		104	167	71	
129	1,564	102				161		93	159	73	
130	1,679	111				162		97	158	70	
131	1,559	104				163		100	155	67	
132	1,505	109				164		99	147	69	
133	1,710	119				165	1,466	95	150	75	
148		100	174			166	1,523	103	164	73	
149		113	190			167		100	157	73	
150		104	162			169				69	397
151		105	162			170				71	380
153		108	162			171				87	478
154		111	161			172				80	448
155		95	156			173				63	355
156		107	162	75		174				72	305
157		105	164	74		175				71	425
158		107	160	73							

14-year-old boys. Worcester, Mass.—Continued.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
1	14.2		2	1,511	730	185	154	122		blo.	bl.		1
2	14.0		4	1,533	801	182	148	126		blo.	g. bl.	1	3
3	14.3	9	1	1,460	783	186	144	124	90	br.	br.	2	1
4	14.0		1	1,411	743	185	144	117	75	d. br.	br.	1	2
5	14.5		1	1,584	803	187	144	121	94	l. br.	bl.	1	1
6	14.3		3	1,539	791	192	140	120	97	blo.	bl.	3	
7	14.6		1	1,561	795	189	144	121	85	blo.	bl.	1	1
8	14.11		1	1,470	752	182	145	122	80	br.	g. br.		
9	14.3		1	1,537	770	175	145	120	83	bl.	bl.	2	2
10	14.8		1	1,515	770	188	151	130	95	d. br.	gr.	1	3
11	14.3		5	1,587	820	193	148	126	110	l. br.	g. br.	1	1
12	14.9	8	2	1,601	794	188	149	130	114	br.	g. br.	1	1
13	14.1		2	1,520	785	194	155	132	98	br.	g. bl.	5	2
14	14.8		1	1,506	769	185	149	133	91	bla.	gr.	1	
15	14.7		2	1,385	723	177	148	125	75	l. br.	bl.	1	
16	14.3	8	1	1,570	797	191	148	131	111	d. br.	br.		8
17	14.4		1	1,412	752	183	158	132	91	l. br.	bl.	2	
18	14.5		2	1,413	718	175	139	117	74	br.	gr.		3
19	14.10	6	2	1,516	778	191	151	121	92	d. br.	br.		2
20	14.11	6	1	1,473	730	187	141	121	87	bla.	br.	1	
21	14.5	6	1	1,680	900	195	150	132	130	l. br.	gr.		1
22	14.10	8	1	1,700	869	189	145	133	112	d. br.	g. br.	1	
23	14.8	9	2	1,622	844	195	146	129				2	
24	14.2	9	1	1,610	833	187	143	126				1	
25	14.2	9	1	1,536	807	187	145	123	85			1	4
26	14.6	9	3	1,559	820	187	145	128	88	bla.	gr.	1	2
27	14.0	8	3	1,454	770	188	153	125	83	bla.	gr.	1	2
28	14.10	8	2	1,705	891	190	140	130	131	br.	gr.	1	
29	14.8	8	2	1,676	882	209	162	145	135	bla.	gr.	1	
30	14.11	8	1	1,593	829	183	148	130	100	bla.	g. br.	3	2
31	14.9	8	4	1,520	799	184	145	126	81	l. br.	bl.	2	3
32	14.7	7	2	1,510	767	190	146	123	95	blo.	bl.	4	
33	14.3	7	3	1,451	746	187	142	122	80	rd.	gr.		2
34	14.7	9	1	1,650	877	191	149	130	113	d. br.	br.	1	2
35	14.1	9	1	1,623	820	194	148	133	105	l. br.	gr.		
36	14.3	9	1	1,569	814	184	149	124	96	br.	bl.		
37	14.4	9	2	1,576	833	192	147	124	98	br.	br.		1
38	14.10	9	1	1,560	833	186	152	130	104	d. br.	bl.		
39	14.9	9	2	1,597	825	190	150	130	101	bio.	gr.		1
40	14.0	8	1	1,339	759	190	146	124	75	rd. br.	br.		
41	14.9	8	9	1,615	841	202	151	137	126	bla.	d. br.	6	4
42	14.1	8	3	1,522	791	186	149	126	94	bla.	l. br.	2	1
43	14.9	8	4	1,423	752	188	149	121	78	d. blo.	bl.	4	2

## 14-year-old boys. Worcester, Mass.—Continued.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
44.	14.3	8	3	1,523	773	177	145	131	88	d. br.	d. br.	3	3
45.	14.2	8	3	1,628	851	186	147	128	119	rd.	gr.	1	1
46.	14.0	8	1	1,630	815	186	149	124	110	br.	l. br.		
47.	14.0	4	4	1,575	814	199	154	133	109	d. br.	gr.		3
48.	14.7	7	3	1,581	812	183	135	110	93	d. br.	bl.	1	2
49.	14.5	7	1	1,568	824	193	143	120	104	l. br.	gr.		
50.	14.3	6	3	1,558	804	185	151	112	107	br.	br.	3	3
51.	14.10	6	1	1,620	854	188	147	115	110	d. blo.	bl.	3	
52.	14.11	6	5	1,538	780	171	141	118	85	d. br.	gr.		4
53.	14.8	6	3	1,705	890	187	150	123	139	br.	bl.	1	
54.	14.6	5	7	1,420	765	185	145	120	78	blo.	bl.	2	4
55.	14.4	7	3	1,529	805	192	148	129	151	d. br.	br.	1	2
56.	14.7	5	3	1,530	787	185	150	127	82	d. br.	bl.	4	5
57.	14.5	8	3	1,616	852	189	156	128	113	l. br.	bl.	1	1
58.	14.9	8	2	1,606	814	188	145	122	102	d. br.	bl.		
59.	14.6	8	5	1,558	823	181	146	131	99	br.	br.	3	1
60.	14.3	7	3	1,655	877	192	151	132	124	rd.	bl.		1
61.	14.8	6	3	1,545	821	175	157	125	94	br.	gr.	3	2
62.	14.3	6	5	1,492	795	182	149	119	86	l. br.	bl.	5	4
63.	14.3	4	2			181	144	126		d. br.	d. br.	2	5
64.	14.9	8	2	1,685	898	189	150	129	122	d. br.	bl.	1	1
65.	14.5	7	1	1,450	764	179	142	120	82	bla.	d. br.	1	2
66.	14.8	7	4	1,553	802	181	147	123	94	br.	br.	2	2
67.	14.2	7	3	1,492	757	177	144	127	84	d. br.	d. br.	1	1
68.	14.6	7	2	1,534	792	193	142	124	102	br.	bl.		1
69.	14.0	9	6	1,497	796	186	144	124	91	d. blo.	bl.	2	3
70.	14.0	9	1	1,683	881	189	153	127	117	br.	bl.	1	
71.	14.9	9	3	1,648	833	187	151	129	112	l. br.	bl.		3
72.	14.10	9	3	1,610	792	191	143	125	93	blo.	gr.	3	
73.	14.3	9	2	1,568	807	189	146	122	97	d. br.	bl.	1	1
74.	14.3	9	2	1,609	827	182	138	118	98	l. blo.	bl.	1	
75.	14.9	9	2	1,592	821	190	143	121	118	d. br.	g. br.	1	2
76.	14.3	9	4	1,555	787	188	148	124	85	blo.	g. bl.	2	9
77.	14.1	9	1	1,374	732	176	141	124	72	bla.	br.	3	2
78.	14.5	9	3	1,581	815	189	148	129	114	d. br.	br.	3	
79.	14.11	8	4	1,403	735	196	141	125	75	br.	br.	1	4
80.	14.0	8	2	1,565	810	185	148	126	84	br.	g. br.	2	1
81.	14.0	8	1	1,485	765	191	146	129	109	l. br.	bl.		
82.	14.0	8	2	1,508	774	180	145	130	84	rd. br.	bl.		1
83.	14.7	6	4	1,504	792	188	148	131	98	d. br.	d. br.	1	3
84.	14.6	6	3	1,480	794	189	142	116	91	br.	br.	2	1
85.	14.5	6	1	1,481	760	184	143	124	80	br.	bl.		
86.	14.0	5	1	1,390	715	176	140	122	68	d. br.	d. br.	5	
87.	14.10	8	4	1,714	871	199	149	131	133	blo.	bl.	1	2
88.	14.9	8	1	1,579	836	191	148	129	103	d. blo.	gr.	1	1
89.	14.9	8	2	1,638	834	185	141	123	104	blo.	bl.		2
90.	14.5	7	1	1,604	823	192	149	130	111	blo.	l. br.	3	
91.	14.5	7	3	1,403	730	181	154	125	84	br.	bl.	1	2
92.	14.1	7	2	1,331	682	189	138	116	66	br.	br.		
93.	14.9		3	1,601	816	197	149	130		br.	gr.		2
94.	14.3		1	1,612	814	196	151	132	125	d. br.	bl.		1
95.	14.11		1	1,653	842	184	133	123	108	d. br.	d. br.	1	1
96.	14.0	H. S.	3	1,516	784	190	152	127	91	d. br.	g. bl.	1	2
97.	14.9	H. S.	1	1,660	872	193	144	129	120	br.	gr.	3	2
98.	14.4	H. S.	1	1,490	711	177	142	122	82	d. br.	d. br.	1	
99.	14.10	H. S.	2	1,593	807	192	148	125	115	rd.	d. br.	1	
100.	14.3		1	1,575	824	186	151	129	116	br.	bl.		
101.	14.1		1	1,524	776	194	149	123	91	br.	bl.	4	2
102.	14.11	H. S.	3	1,601	826	195	142	122	114	br.	bl.	4	0
103.	14.4	H. S.	a1	1,672	852	183	142	122	122	d. br.	d. br.		2
104.	14.4	H. S.	4	1,450	752	178	150	126	80	d. br.	d. br.	6	1
105.	14.8	H. S.	1	1,716	907	190	152	129	133	br.	g. bl.	1	
106.	14.8	H. S.	6	1,543	824	186	144	125	105	br.	bl.	2	3
107.	14.5	H. S.	5	1,541	789	200	141	124	96	d. br.	d. br.	2	3
108.	14.6	H. S.	2	1,518	813	186	146	126	93	blo.	gr.		2
109.	14.8	H. S.	7	1,494	812	201	154	130	105	br.	bl.	5	1
110.	14.9	H. S.	1	1,437	772	176	142	126	83	bla.	br.	4	2
111.	14.0	9	4	1,522	793	184	139	119	86	br.	bl.		2
112.	14.11	H. S.	2	1,668	849	184	143	121	114	l. br.	bl.		
113.	14.0	H. S.	2	1,610	827	184	150	127	101	br.	bl.	b2	c2
114.	14.10	H. S.	1	1,684	842	195	150	136	117	br.	gr.		
115.	14.3	H. S.	4	1,446	744	185	149	133	87	d. br.	d. br.	6	1
116.	14.8	H. S.	1	1,337	677	178	153	120	64	d. br.	g. bl.	3	
117.	14.2	H. S.	4	1,599	815	196	147	132	115	d. br.	d. br.	1	2

a Twin.

b Half brother.

c Half sister.

## 14-year-old boys. Worcester, Mass.—Continued.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
118	14.9	H. S.	1	1,466	768	188	148	124	104	d. br.	bl.	—	2
119	14.11	H. S.	2	1,629	838	188	150	125	103	br.	g. bl.	1	—
120	14.7	—	3	1,441	758	183	148	125	88	d. br.	g. br.	—	3
121	14.6	H. S.	2	1,550	805	187	144	127	102	br.	bl.	4	—
122	14.10	H. S.	6	1,440	770	190	146	123	88	br.	gr.	6	3
123	14.3	H. S.	4	1,533	798	181	145	130	102	d. br.	d. br.	3	2
124	14.10	H. S.	3	1,545	807	198	151	132	103	d. br.	g. bl.	3	1
125	14.11	H. S.	1	1,608	832	199	149	127	108	d. br.	gr.	1	2
126	14.3	9	3	1,601	860	180	150	130	—	l. br.	bl.	4	1
127	14.2	9	5	1,630	850	188	141	131	—	d. br.	d. br.	1	4
128	14.1	9	3	1,530	800	179	144	130	—	d. br.	gr.	1	1
129	14.7	9	4	1,614	870	197	151	132	—	d. blo.	g. bl.	4	—
130	14.3	9	3	1,660	860	190	153	131	—	d. blo.	gr.	4	4
131	14.11	9	2	1,545	810	182	141	122	—	d. br.	bl.	—	1
132	14.5	9	5	1,492	820	191	146	129	—	d. br.	l. br.	—	4
133	14.9	9	1	1,622	850	194	144	124	—	gr.	gr.	2	—
134	14.3	8	1	1,558	830	201	149	131	—	d. br.	l. br.	—	—
135	14.5	8	1	1,409	740	187	153	129	78	d. blo.	g. bl.	2	2
136	14.1	8	1	1,472	740	192	156	126	71	d. blo.	l. br.	1	4
137	14.7	8	3	1,445	780	192	152	122	—	bl.	bl.	1	2
138	14.9	7	1	1,485	800	192	151	96	—	d. blo.	g. bl.	—	—
139	14.1	7	2	1,706	910	182	146	137	—	—	—	1	—
140	14.10	7	2	1,462	780	179	142	122	—	d. br.	d. br.	2	2
141	14.1	7	4	1,572	840	186	141	127	—	d. br.	gr.	1	1
142	14.5	5	1	1,554	810	175	136	122	90	d. br.	gr.	1	—
143	14.0	5	1	1,562	840	180	141	128	—	d. br.	bl.	—	—
144	14.9	7	3	1,575	850	194	147	135	—	d. br.	g. bl.	4	—
145	14.5	5	1	1,419	720	177	144	122	76	d. blo.	bl.	4	2
146	14.0	7	1	1,502	820	185	143	129	—	d. br.	gr.	—	—
147	14.3	7	1	1,524	782	178	141	127	90	d. blo.	gr.	—	—
148	14.3	8	6	1,531	824	171	150	131	—	rd. br.	—	1	7
149	14.0	8	1	1,494	790	190	153	128	—	d. br.	d. br.	—	3
150	14.6	8	1	1,454	753	190	143	124	80	d. br.	l. br.	2	—
151	14.3	8	6	1,566	810	187	158	136	—	d. br.	gr.	4	3
152	14.7	9	9	1,551	830	190	150	125	96	d. br.	bl.	4	4
157	14.11	7	1	1,545	799	180	146	126	—	d. br.	g. br.	1	2
161	14.8	9	2	1,596	840	197	150	123	117	d. br.	gr.	—	1
169	14.2	9	6	1,478	860	181	142	122	80	l. br.	bl.	1	4

## ADDITIONAL SERIES.

Number.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.	Number.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.
153	14.0	5	1,545	790	420	76	104	163	14.5	9	1,672	865	478	80	121
154	14.6	9	1,597	845	460	85	115	164	14.5	7	1,456	760	396	69	102
155	14.6	—	1,728	860	490	82	119	165	14.11	7	1,610	825	440	79	116
156	14.11	—	1,625	840	450	84	122	166	14.4	5	1,518	788	427	79	94
158	14.0	6	1,401	745	380	70	78	167	14.7	9	1,647	853	452	85	124
159	14.2	8	1,605	861	440	83	103	168	14.0	7	1,411	720	405	75	82
160	14.10	9	1,531	795	413	78	88	170	14.11	9	1,577	815	450	80	94
162	14.7	6	1,395	725	370	64	72	—	—	—	—	—	—	—	—

## 14-year-old boys. Worcester, Mass.—Continued.

## REPEATED MEASUREMENTS.

Number in 13-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.	Number in 13-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.
5	14.10	9	1,530	805	423	81	87	58	14.4	---	1,555	820	415	76	108
7	14.8	9	1,537	812	420	83	75	59	14.6	---	1,497	775	400	75	84
10	14.4	9	1,551	816	450	83	112	60	14.9	---	1,610	825	445	82	104
11	14.6	9	1,523	803	435	83	97	61	14.4	---	1,486	785	410	74	112
12	14.6	9	1,590	835	443	83	106	62	14.2	---	1,486	740	410	76	81
13	14.8	9	1,610	810	440	78	100	63	14.7	---	1,453	755	390	75	35
16	14.3	9	1,563	822	445	81	105	64	14.11	---	1,616	855	480	81	111
18	14.2	9	1,560	795	434	78	108	74	14.1	---	1,644	845	440	80	96
21	14.3	9	1,570	820	425	77	91	75	14.4	---	1,575	795	450	81	97
22	14.2	9	1,470	750	403	70	77	77	14.9	---	1,596	840	455	82	111
27	14.4	9	1,625	850	435	74	123	78	14.0	---	1,411	745	385	76	66
28	14.4	9	1,485	805	400	72	82	79	14.9	---	1,523	810	410	76	102
30	14.2	9	1,642	830	455	83	94	85	14.6	---	1,522	820	435	85	104
31	14.9	9	1,643	835	430	81	112	84	14.11	---	1,720	900	485	91	124
32	14.4	9	1,559	795	455	82	98	86	14.11	---	1,612	840	460	81	110
33	14.11	9	1,517	805	465	82	98	87	14.10	---	1,545	820	425	78	99
35	14.2	9	1,437	755	410	75	81	88	14.10	---	1,670	845	450	86	113
36	14.9	9	1,391	720	380	68	69	89	14.5	---	1,522	800	450	79	107
40	14.2	9	1,494	810	415	71	82	91	14.9	---	1,495	865	390	74	91
41	14.10	9	1,635	830	475	84	116	92	14.3	---	1,604	825	440	83	151
44	14.11	9	1,725	910	470	87	130	99	14.10	---	1,573	860	425	81	102
45	14.4	9	1,643	870	450	87	123	101	14.7	---	1,507	795	410	79	99
46	14.3	9	1,609	845	440	80	102	102	14.11	---	1,512	780	410	72	84
47	14.9	9	1,458	780	395	75	91	107	14.2	---	1,496	800	400	76	86
48	14.4	9	1,553	805	440	78	96	108	14.0	---	1,383	745	370	69	71
49	14.10	9	1,422	770	385	75	77	111	14.5	---	1,536	810	425	75	98
51	14.5	9	1,661	861	486	87	111	112	14.6	---	1,522	810	420	75	92
54	14.4	9	1,566	825	435	82	100	113	14.10	---	1,535	810	425	74	93
55	14.7	9	1,610	835	440	85	116	114	14.7	---	1,449	870	395	73	90
57	14.3	9	1,470	770	410	72	82	160	14.10	9	1,581	795	413	78	88

## ADDITIONAL MEASUREMENTS.

Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.	Forearm.	Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.	Forearm.
1	1,517	98				116	1,396	94			
2	1,597	102				117	1,640	99			
94	1,646	107				118	1,435	105			
95	1,678	110				119	1,680	114			
96	1,540	108				120	1,494	103			
97	1,711	106				121	1,624	106			
98	1,566	98				122	1,465	109			
99	1,647	104				123	1,612	117			
100	1,633	112				124	1,526	101			
101	1,598	110				125	1,684	105			
102	1,659	111				142		108	166		
103	1,702	110				143		105	161		
104	1,475	102				144		121	178		
105	1,788	112				145		97	146	74	
106	1,600	104				146		102	151	78	
107	1,626	109				147		96	165	81	
108	1,503	102				148		111	163	80	
109	1,501	111				149		110	172	76	
110	1,526	98				150		103	158	76	
111	1,555	100				151		114	160	78	
112	1,692	114				152		116	171	79	400
113	1,603	104				157		(?) 119	(?) 170	70	380
114	1,738	115				161	1,585	106	177	85	440
115	1,513	102				169		105	151	72	400

## STATISTICS OF GROWTH.

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## 15-year-old boys. Worcester, Mass.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
1	15.0		1	1,622	824	185	153	131	br.	br.	l. br.	2	
2	15.0		1	1,685	852	190	145	134	br.	blo.	g. bl.		
3	15.10		1	1,673	861	183	147	128	d. br.	d. br.	gr.		
4	15.0		6	1,542	773	191	148	132	83	d. br.	l. bl.	3	2
5	15.6		2	1,566	805	185	151	133	112	bla.	br.	2	2
6	15.3		1	1,555	808	193	153	130	97	blo.	bl.		
7	15.11		1	1,421	718	178	135	114	74	d. br.	br.		1
8	15.5			1,067	639	184	146	128	123	blo.	g. bl.	1	1
9	15.10		1	1,648	838	192	145	128	111	blo.	g. br.	3	
10	15.0	7	1	1,631	818	190	150	128	108	l. br.	br.	1	1
11	15.10		2	1,445	757	182	148	130	86	d. br.	d. br.	1	
12	15.2		2	1,597	822	182	144	129	108	br.	bl.		2
13	15.9	5	2	1,750	904	181	155	135	140	br.	bl.	1	
14	15.9	9	5	1,401	752	185	143	126	85	l. br.	gr.	2	2
15	15.7	5	1	1,538	806	188	151	127	98	br.	bl.	4	2
16	15.11	9	7	1,776	914	195	151	127	125	br.	bl.	4	2
17	15.1	7	2	1,485	784	183	150	125	96	d. br.	bl.		1
18	15.9	8	1	1,587	842	181	150	136	109	br.	bl.		1
19	15.9	9	7	1,716	890	205	149	135	147			2	4
20	15.5	9	2	1,715	899	194	157	135	129			2	2
21	15.3								135				
22	15.7	9	5	1,528	817	180	144	126	96	br.	gr.	3	2
23	15.10	9	2	1,609	838	180	148	126	110	blo.	bl.	1	1
24	15.7	9	2	1,671	848	186	149	124	112	blo.	bl.	2	
25	15.2	8	1	1,531	793	190	150	121	90	blo.	bl.	2	1
26	15.6	8	1	1,566	806	181	141	122	101	l. br.	bl.		
27	15.6	8	1	1,522	789	182	150	130	93	br.	bl.		
28	15.10	8	1	1,633	842	194	161	128	127	blo.	bl.	1	1
29	15.7	8	3	1,534	874	194	150	132	128	d. br.	gr.	3	1
30	15.0	7	1	1,507	754	176	142	123	85	d. br.	bl.		2
31	15.0	7	2	1,556	808	175	149	129	94	d. blo.	g. bl.	1	1
32	15.1	8	1	1,755	895	195	147	126	137	d. br.	bl.		1
33	15.0	9	2	1,521	775	189	150	133	97	br.	gr.	1	1
34	15.5	9	1	1,694	874	181	147	124	126	br.	bl.		
35	15.2	9	1	1,488	756	180	143	120	78	l. br.	gr.	2	1
36	15.2	9	2	1,590	800	186	144	126	100	br.	gr.	1	
37	15.0	9	3			189	148	135		blo.	br.	2	
38	15.8	9	1	1,701	863	191	151	130	132	br.	bl.		
39	15.10	9	3	1,617	841	187	141	121	118	d. br.	bl.	2	
40	15.9	8	6	1,568	816	192	144	124	108	d. br.	br.	2	3
41	15.11	8	4	1,495	791	193	149	125	90	d. br.	l. br.	1	3
42	15.8	8	3	1,642	848	189	144	127	121	br.	bl.	3	
43	15.1	7	2	1,593	832	184	148	130	118	bla.	br.	1	1
44	15.10	7	7	1,598	852	167	144	122	99	d. br.	bl.	4	3
45	15.6	8	1	1,624	834	186	141	119	102				2
46	15.8	8	4	1,626	871	185	151	133	125	br.	gr.	1	3
47	15.0	8	6	1,452	777	183	147	121	81	br.	g. br.	2	3
48	15.0	8	2	1,566	800	187	158	129	96	d. br.	bl.	1	
49	15.9	8	1	1,653	843	182	151	130	115	br.	g. bl.		
50	15.10	8	3	1,650	872	190	148	122	119	d. blo.	g. bl.	2	3
51	15.5	8	1	1,722	900	189	148	135	145	l. br.	gr.		
52	15.1	8	1	1,561	856	185	147	127	101	l. br.	l. br.	4	
53	15.3	7	1	1,739	888	183	148	132	118	br.	bl.		
54	15.10	9	2	1,654	844	192	143	120	116	br.	l. br.		1
55	15.0	9	4	1,654	811	185	147	127	96	d. br.	bl.	5	2
56	15.10	9	4	1,596	813	195	144	129	92	br.	bl.	1	2
57	15.6	9	3	1,735	903	191	146	128	144	rd.	g. bl.	1	1
58	15.7	9	1	1,732	923	199	145	125	144	br.	g. bl.	1	
59	15.6	9	1	1,646	813	185	139	122	113	d. br.	d. br.	2	
60	15.3	9	1	1,658	865	196	145	131	132	d. blo.	bl.	2	
61	15.3	9	1	1,670	895	186	149	129	128	br.	bl.		
62	15.0	9	3	1,586	819	191	144	126	115	d. br.	br.	2	3
63	15.9	9	2	1,671	872	191	148	134	133	bla.	gr.	1	
64	15.8	8	5	1,735	875	195	151	135	124	d. br.	gr.	3	1
65	15.10	8	1	1,611	840	185	145	129	104	d. br.	bl.	3	5
66	15.9	2d yr. <sup>b</sup>	2	1,615	855	191	150	131		blo.	bl.	1	3
67	15.8		2	1,653	845	190	141	126		br.	g. bl.	3	
68	15.10		4	1,677	852	188	149	131		d. br.	bl.	2	1
69	15.7		2	1,640	830	191	148	128		br.	gr.	2	
70	15.7		2	1,638	832	194	145	126		br.	gr.	2	
71	15.6		1	1,724	920	191	148	132		br.	gr.		1
72	15.10		3	1,642	873	201	144	127		d. br.	br.	1	4
73	15.10		1	1,487	756	181	135	122		l. br.	bl.	3	3
74	15.8		2	1,687	884	181	153	133		d. blo.	g. bl.	2	
75	15.8		4	1,686	852	202	150	137		br.	br.	2	1
76	15.1		1	1,441	706	185	140	131		d. br.	d. br.		
77	15.11	Sen.	1	1,738	908	195	154	135	131	d. br.	d. br.	5	

<sup>a</sup> Of twins.<sup>b</sup> H. S., 1st, 2d, 3d yr., Jr., Sen., designate high school pupils.



## 14-year-old boys. Worcester, Mass.—Continued.

## REPEATED MEASUREMENTS.

Number in 18-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.	Number in 18-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.
5	14.10	9	1,530	906	423	81	37	58	14.4	...	1,555	820	415	76	108
7	14.8	9	1,537	912	400	75	100	59	14.6	...	1,497	775	400	75	94
10	14.4	8	1,531	913	450	83	112	60	14.9	8	1,619	845	445	82	104
11	14.6	8	1,523	908	435	89	97	61	14.4	...	1,495	795	410	74	112
12	14.6	8	1,530	935	443	84	103	62	14.2	7	1,485	740	410	76	81
13	14.8	8	1,610	910	440	78	100	63	14.7	7	1,452	755	390	75	85
16	14.2	8	1,563	822	448	81	105	64	14.11	8	1,616	855	430	81	111
18	14.2	8	1,530	795	434	78	108	74	14.1	8	1,644	845	440	80	96
21	14.3	7	1,570	820	425	77	91	75	14.4	8	1,575	795	450	81	87
22	14.2	7	1,470	750	403	70	77	76	14.9	8	1,593	840	455	82	111
27	14.4	6	1,625	850	435	74	123	77	14.0	7	1,411	745	395	76	86
28	14.4	6	1,435	805	400	72	82	78	14.9	7	1,523	810	410	76	102
30	14.2	9	1,642	830	455	83	94	79	14.8	9	1,622	820	435	85	104
31	14.9	9	1,643	885	430	81	113	84	14.11	8	1,720	900	435	91	124
32	14.4	9	1,550	795	455	82	98	85	14.11	8	1,612	840	460	81	110
33	14.11	9	1,517	805	405	82	98	86	14.10	8	1,543	820	425	78	90
35	14.2	9	1,437	755	410	75	81	87	14.10	7	1,670	845	450	86	114
36	14.9	6	1,361	720	380	68	69	88	14.5	7	1,522	800	450	79	107
40	14.2	7	1,494	810	415	71	82	89	14.9	6	1,495	805	390	74	81
41	14.10	7	1,635	830	475	84	116	90	14.3	8	1,604	825	440	83	101
44	14.11	6	1,725	910	470	87	130	92	14.10	9	1,573	860	425	81	102
45	14.4	8	1,643	870	450	87	123	93	14.7	9	1,507	795	410	79	90
46	14.3	8	1,609	845	440	80	102	101	14.11	9	1,512	780	410	72	84
47	14.9	8	1,458	790	395	75	91	102	14.2	9	1,496	800	400	76	84
48	14.4	8	1,583	805	440	78	96	107	14.0	8	1,383	745	370	69	76
49	14.10	8	1,422	770	385	75	77	108	14.5	8	1,536	810	425	75	88
51	14.5	8	1,631	801	438	87	111	111	14.6	9	1,522	810	420	75	88
54	14.4	9	1,506	825	435	82	100	112	14.10	9	1,535	810	425	74	88
57	14.7	9	1,610	835	440	85	116	113	14.7	9	1,449	770	395	73	80
57	14.3	...	1,470	770	410	72	82	160	14.10	9	1,581	795	413	78	88

## ADDITIONAL MEASUREMENTS.

Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.	Forearm.	Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.	Forearm.
1	1,517	98	...	...	...	116	1,396	94	...	...	...
2	1,597	102	...	...	...	117	1,640	99	...	...	...
94	1,646	107	...	...	...	118	1,435	105	...	...	...
95	1,678	110	...	...	...	119	1,680	114	...	...	...
96	1,540	108	...	...	...	120	1,494	103	...	...	...
97	1,711	106	...	...	...	121	1,624	106	...	...	...
98	1,566	98	...	...	...	122	1,465	109	...	...	...
99	1,647	104	...	...	...	123	1,612	117	...	...	...
100	1,633	112	...	...	...	124	1,526	101	...	...	...
101	1,598	110	...	...	...	125	1,684	105	...	...	...
102	1,659	111	...	...	...	126	...	108	166	...	...
103	1,702	110	...	...	...	127	...	105	161	...	...
104	1,475	102	...	...	...	128	...	121	178	...	...
105	1,786	112	...	...	...	129	...	97	146	74	...
106	1,600	104	...	...	...	130	...	102	151	78	...
107	1,626	109	...	...	...	131	...	96	165	81	...
108	1,503	102	...	...	...	132	...	111	163	80	...
109	1,501	111	...	...	...	133	...	110	172	76	...
110	1,526	98	...	...	...	134	...	103	158	76	...
111	1,555	100	...	...	...	135	...	114	160	78	...
112	1,692	114	...	...	...	136	...	116	171	79	...
113	1,603	104	...	...	...	137	...	119	170	70	...
114	1,738	115	...	...	...	138	1,585	106	177	85	...
115	1,513	102	...	...	...	139	...	105	151	72	...

## STATISTICS OF GROWTH.

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15-year-old boys. Worcester, Mass.—Continued.

## ADDITIONAL SERIES.

Number.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.	Number.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.
155	15.0	9	1,681	883	457	87	127	158	15.1	7	1,600	815	420	70	80
156	15.11	9	1,628	822	421	75	85	159	15.6	8	1,432	780	385	73	77
157	15.6	9	1,509	785	426	75	84	160	15.6	8	1,436	770	400	67	78

## REPEATED MEASUREMENTS.

Number in 14-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.	Number in 14-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.
7	15.10	9	1,642	845	445	76	98	48	15.0	7	1,646	890	440	79	102
9	15.8	9	1,622	816	451	80	98	53	15.8	7	1,729	915	435	83	142
10	15.11	9	1,623	833	445	84	123	55	15.6	7	1,632	850	470	88	173
11	15.7	9	1,655	905	450	83	113	56	15.3	6	1,632	830	430	78	96
12	15.9	9	1,650	840	471	87	128	60	15.6	7	1,707	820	470	89	140
14	15.8	9	1,576	810	449	82	105	61	15.9	7	1,684	865	435	75	105
15	15.7	9	1,438	750	408	73	83	64	15.10	7	1,710	820	430	85	129
28	15.11	9	1,736	825	590	90	140	65	15.7	8	1,650	815	440	77	95
29	15.8	9	1,713	825	475	83	136	68	15.7	8	1,619	890	455	83	117
31	15.10	9	1,565	820	420	73	86	79	15.11	9	1,463	790	385	75	103
32	15.0	9	1,591	835	435	82	112	80	15.1	9	1,635	850	430	78	98
33	15.4	8	1,645	810	415	77	97	81	15.1	9	1,600	815	445	75	131
41	15.6	9	1,682	885	486	84	131	85	15.7	7	1,508	775	420	74	91
43	15.8	9	1,566	835	430	83	96	87	15.10	9	1,733	900	490	80	143
44	15.6	9	1,625	840	445	82	106	89	15.9	9	1,633	890	475	81	116
45	15.8	9	1,693	880	490	85	133	90	15.6	9	1,663	885	465	82	127
47	15.8	9	1,661	855	475	90	128								

## ADDITIONAL MEASUREMENTS.

Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.	Forearm.	Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.	Forearm.
1	1,648	112				102	1,765	112			
2	1,785	113				103	1,742	110			
3	1,756	103				104	1,761	108			
74	1,788	105				105	1,833	119			
77	1,815	120				106	1,763	118			
78	1,683	115				107	1,609	107			
79	1,790	111				108	1,622	102			
80	1,709	110				109	1,749	116			
81	1,695	117				110	1,720	112			
82	1,725	114				111	1,754	116			
83	1,661	108				112	1,508	107			
84	1,695	104				113	1,557	114			
85	1,605	102				114	1,662	108			
86	1,602	111				115	1,815	119			
87	1,485	104				116	1,704	112			
88	1,680	103				117	1,660	111			
89	1,658	110				118	1,619	112			
90	1,720	110				119	1,577	100			
91	1,726	123				120	1,763	111			
92	1,712	110				121	1,760	114			
93	1,793	115				122	1,674	113			
94	1,662	106				123	1,670	113			
95	1,644	107				124	1,672	105			
96	1,810	110				125	1,744	118			
97	1,780	113				126	1,719	108			
98	1,668	111				127	1,767	114			
99	1,730	117				128	1,622	110			
100	1,793	116				129	1,790	111			
101	1,734	117				130	1,484	101			

## 15-year-old boys. Worcester, Mass.—Continued.

## ADDITIONAL MEASUREMENTS—Continued.

Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.	Forearm.	Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.	Forearm.
131	1,805	114				141	1,647	108			
132	1,456	100				142	1,494	102			
133	1,730	113				143		128	190		
134	1,648	108				144		111	151	80	
135	1,725	109				145	1,593	172	111		
136	1,419	105				146		157	110	70	
137	1,686	105				147		180	111	81	
138	1,532	101				148	1,644	163	106	85	
139	1,552	110				149	1,735	176	118		
140	1,640	111				150	1,846	133			

## 16-year-old boys. Worcester, Mass.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
1	16.10		5	1,641	870	185	145	123	.....	br.	gr.	1	5
2	16.10		5	1,669	894	189	150	131	.....	bla.	br.	2	1
3	16.9		5	1,592	836	190	140	127	.....	blo.	l. br.	1	3
4	16.7		2	1,590	830	196	153	131	.....	blo.	g. bl.		
5	16.0		1	1,640	863	191	147	120	.....	blo.	g. bl.		
6	16.11		1	1,557	842	187	153	136	122	l. br.	l. br.	1	1
7	16.7	8	1	1,683	863	190	151	125	110	br.	bl.	1	2
8	16.7		2	1,640	889	185	155	131	127	bla.	g. bl.	1	2
9	16.11	9	2	1,645	895	194	151	132	124	d. br.	g. bl.		1
10	16.7	9	2	1,527	827	185	147	125	108	d. br.	bl.		1
11	16.0	9	1	1,610	865	175	141	127	100	bla.	bl.		1
12	16.2	9	1	1,681	899	201	158	138	158				
13	16.1	9	2	1,646	835	193	148	126	125	bla.	gr.		2
14	16.2	9	2	1,672	885	188	153	134	130	bla.	bl.		1
15	16.0	8	2	1,544	791	179	142	121	91	rd.	bl.	3	2
16	16.1	8	3	1,606	841	186	149	132	104	br.	bl.	2	1
17	16.6	9	2	1,677	859	185	155	137	148	br.	gr.		
18	16.0	8	3	1,680	870	205	151	128	136	br.	g. bl.	3	1
19	16.2	8	6	1,730	899	195	147	131	129	br.	br.	5	1
20	16.4	9	3	1,677	883	189	153	133	126	br.	br.	3	
21	16.7	9	2	1,596	825	181	153	131	120	br.	bl.	3	
22	16.8	9	1	1,651	851	197	148	129	129	rd.	g. bl.	1	1
23	16.10	9	2	1,590	817	183	140	123	96	bl.	bl.	1	1
24	16.4	9	2	1,671	872	194	139	128	129	br.	bl.		3
25	16.2	9	2	1,724	844	188	154	132	144	br.	br.	1	1
26	16.4	7	1	1,690	850	193	147	134	119	d. blo.	g. bl.		
27	16.5			1,745	904	186	147	130				3	1
28	16.9	1st yr.	1	1,574	820	189	151	128	.....	br.	br.		
29	16.1	Jr.	3	1,607	822	196	149	127	.....	br.	br.	2	2
30	16.9		1	1,715	845	189	147	135	.....	br.	bl.	1	2
31	16.8		1	1,734	882	191	151	138	.....	br.	bl.	1	3
32	16.9		1	1,603	821	199	154	133	.....	rd.	l. br.	1	4
33	16.11	1st yr.	4	1,609	886	207	154	131	.....	br.	gr.		3
34	16.0	1st yr.	3	1,746	901	187	150	132	.....	blo.	bl.	2	1
35	16.8		1	1,625	828	190	148	134	.....	br.	gr.		
36	16.9		6	1,638	842	187	148	128	.....	br.	br.	2	1
37	16.2		3	1,579	827	183	149	127	.....	l. br.	br.		4
38	16.10		5	1,667	867	204	148	129	.....	d. br.	gr.	2	5
39	16.9		1	1,627	800	195	144	133	.....	br.	gr.		
40	16.3		2	1,785	939	201	150	135	.....	br.	g. bl.		1
41	16.7		2	1,710	869	196	138	122	.....	l. br.	gr.	1	1
42	16.11	3d yr.	2	1,703	864	193	153	140	.....	d. br.	d. br.	1	
43	16.0	Jr.	1	1,737	912	194	151	132	.....	br.	gr.	1	1
44	16.9	Jr.	2	1,660	868	196	144	127	.....	br.	br.		
45	16.6		1	1,543	846	186	155	134	110	d. br.	g. bl.	2	5
46	16.8	Jr.	2	1,601	827	187	151	130	103	d. br.	g. bl.	1	
47	16.4		2	1,637	853	188	156	136	112	d. br.	gr.	2	3
48	16.7		6	1,640	830	180	145	120	101	d. br.	l. br.	4	4
49	16.5	Jr.	1	1,698	867	189	148	136	137	br.	g. bl.		
50	16.1	Jr.		1,722	903	204	149	134	140	br.	bl.	7	1
51	16.5		8	1,623	865	190	156	136	123	br.	bl.	1	2
52	16.5		3	1,748	827	201	155	132	147	br.	g. bl.	1	1
53	16.4		3	1,657	871	187	144	123	111	d. br.	d. br.	4	4
54	16.5		6	1,782	896	183	153	132	135	br.	bl.	4	2

## STATISTICS OF GROWTH.

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15-year-old boys. Worcester, Mass.—Continued.

## ADDITIONAL SERIES.

Number.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.	Number.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.
155 .....	15.0	9	1,681	888	457	87	127	158 .....	15.1	7	1,600	815	420	70	80
156 .....	15.11	9	1,628	822	421	75	96	159 .....	15.6	8	1,422	780	388	73	77
157 .....	15.6	9	1,509	786	426	75	84	160 .....	15.6	8	1,486	770	400	67	78

## REPEATED MEASUREMENTS.

Number in 14-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.	Number in 14-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.
7 .....	15.10	9	1,642	845	445	76	98	48 .....	15.0	---	1,646	880	440	79	108
9 .....	15.8	9	1,622	816	451	80	98	53 .....	15.8	7	1,729	915	485	83	142
10 .....	15.11	9	1,623	838	445	84	122	55 .....	15.6	7	1,622	850	470	88	173
11 .....	15.7	9	1,656	905	450	83	113	56 .....	15.6	6	1,632	890	470	78	96
12 .....	15.9	9	1,650	840	471	87	126	60 .....	15.3	8	1,707	920	470	89	140
14 .....	15.8	9	1,578	810	449	72	106	61 .....	15.9	7	1,584	865	435	75	106
15 .....	15.7	9	1,433	750	408	73	83	64 .....	15.10	9	1,710	920	490	85	129
28 .....	15.11	9	1,736	925	590	90	140	65 .....	15.7	8	1,550	815	440	77	96
29 .....	15.8	9	1,715	920	475	88	136	68 .....	15.7	8	1,619	890	455	83	117
31 .....	15.10	9	1,566	820	420	73	86	79 .....	15.11	9	1,463	780	385	75	103
32 .....	15.0	9	1,591	895	435	82	112	80 .....	15.1	9	1,636	850	430	79	96
33 .....	15.4	9	1,545	810	415	77	97	81 .....	15.1	9	1,560	815	445	75	131
41 .....	15.6	9	1,662	865	495	84	131	85 .....	15.7	7	1,508	775	420	74	91
43 .....	15.8	9	1,566	835	430	83	98	87 .....	15.10	9	1,738	900	490	80	143
44 .....	15.2	9	1,625	840	445	82	106	89 .....	15.9	9	1,683	880	475	81	116
45 .....	15.8	9	1,693	880	490	85	133	90 .....	15.6	9	1,693	885	455	82	127
47 .....	15.2	---	1,651	855	475	90	128								

## ADDITIONAL MEASUREMENTS.

Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.	Forearm.	Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.	Forearm.
1 .....	1,648	112	---	---	---	102 .....	1,765	112	---	---	---
2 .....	1,785	113	---	---	---	103 .....	1,742	110	---	---	---
3 .....	1,756	103	---	---	---	104 .....	1,761	108	---	---	---
74 .....	1,788	105	---	---	---	105 .....	1,833	119	---	---	---
77 .....	1,815	120	---	---	---	106 .....	1,768	113	---	---	---
78 .....	1,683	115	---	---	---	107 .....	1,609	107	---	---	---
79 .....	1,790	111	---	---	---	108 .....	1,622	102	---	---	---
80 .....	1,709	110	---	---	---	109 .....	1,749	116	---	---	---
81 .....	1,695	117	---	---	---	110 .....	1,720	112	---	---	---
82 .....	1,725	114	---	---	---	111 .....	1,754	116	---	---	---
83 .....	1,661	108	---	---	---	112 .....	1,508	107	---	---	---
84 .....	1,695	104	---	---	---	113 .....	1,557	114	---	---	---
85 .....	1,605	102	---	---	---	114 .....	1,662	108	---	---	---
86 .....	1,602	111	---	---	---	115 .....	1,815	119	---	---	---
87 .....	1,485	104	---	---	---	116 .....	1,704	112	---	---	---
88 .....	1,680	103	---	---	---	117 .....	1,660	111	---	---	---
89 .....	1,658	110	---	---	---	118 .....	1,619	112	---	---	---
90 .....	1,720	110	---	---	---	119 .....	1,577	100	---	---	---
91 .....	1,726	123	---	---	---	120 .....	1,763	111	---	---	---
92 .....	1,712	110	---	---	---	121 .....	1,760	114	---	---	---
93 .....	1,793	115	---	---	---	122 .....	1,674	113	---	---	---
94 .....	1,662	106	---	---	---	123 .....	1,670	113	---	---	---
95 .....	1,644	107	---	---	---	124 .....	1,672	105	---	---	---
96 .....	1,810	110	---	---	---	125 .....	1,744	133	---	---	---
97 .....	1,780	113	---	---	---	126 .....	1,719	108	---	---	---
98 .....	1,668	111	---	---	---	127 .....	1,767	114	---	---	---
99 .....	1,730	117	---	---	---	128 .....	1,622	110	---	---	---
100 .....	1,793	116	---	---	---	129 .....	1,790	111	---	---	---
101 .....	1,734	117	---	---	---	130 .....	1,484	101	---	---	---

## 16-year-old boys. Worcester, Mass.—Continued.

## ADDITIONAL MEASUREMENTS—Continued.

Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.	Forearm.	Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.	Forearm.
1	1,688	118				65	1,726	111			
2	1,730	112				66	1,843	112			
3	1,642	109				67	1,755	123			
4	1,606	120				68	1,785	119			
37	1,663	117				69	1,693	103			
40	1,809	111				70	1,809	114			
42	1,799	113				71	1,838	119			
43	1,760	122				72	1,548	113			
44		122				73	1,670	113			
45	1,564	107				74	1,603	112			
46	1,633	113				75	1,857	134			
47	1,712	119				76	1,637	113			
48	1,632	112				77	1,776	113			
49	1,798	116				78	1,622	101			
50	1,827	125				79	1,743	117			
51	1,694	118				80	1,822	124			
52	1,799	113				81	1,680	106			
53	1,751	113				82	1,614	106			
54	1,860	112				83	1,712	113			
55	1,667	102				84	1,755	115			
56	1,820	113				85	1,790	116			
57	1,826	122				86	1,698	105			
58	1,660	106				87	1,653	105			
59	1,806	114				88	1,680	119			
60	1,727	111				89	1,702	111			
61	1,776	132				94		175	102	80	450
62	1,800	110				95		162	98	79	455
63	1,683	113				96		163	106	78	415
64	1,709	132									

## 17-year-old boys. Worcester, Mass.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
1	17.8		3	1,742	872	200	144	132		blo.	g. bl.	2	1
2	17.0		2	1,758	876	183	149	129		d. blo.	g. bl.	1	
3	17.9		2	1,734	895	183	147	129		bla.	br.		
4	17.0	9	4	1,588	830	190	154	132	122	d. br.	bl.	3	2
5	17.5	9	6	1,630	906	190	148	127	118	d. br.	bl.	2	4
6	17.5	9	9	1,635	861	196	152	135	137	br.	br.	5	4
7	17.7		1	1,700	909	189	141	127		br.	g. bl.		1
8	17.8		1	1,790	897	200	147	130		l. br.	l. br.	3	
9	17.11	Jun.	3	1,677	866	190	145	128		br.	gr.		1
10	17.8		4	1,785	935	186	154	137		bla.	br.	1	2
11	17.1		2	1,640	838	199	152	136		l. br.	g. bl.		1
12	17.0		2	1,692	935	191	158	137		br.	br.	1	2
13	17.0		2	1,616	896	195	144	130		br.	br.	1	2
14	17.1		1	1,573	827	178	154	123		d. br.	d. br.	1	
15	17.9		3	1,767	928	200	154	134		br.	gr.	2	1
16	17.1		5	1,716	884	193	155	134	138	br.	gr.	4	1
17	17.3		1	1,688	912	201	147	130	128	d. br.	gr.	3	2
18	17.0	Sen.	9	1,780	928	188	157	138	175	br.	bl.	6	2
19	17.11	Sen.	7	1,662	864	192	151	130	130	d. br.	gr.	1	3
20	17.6	Sen.	2	1,634	836	184	155	133	110	br.	g. bl.		1
21	17.11	Jun.	1	1,615	843	197	141	129		blo.	g. bl.		2
22	17.5	Jun.	2	1,696	906	207	154	135	145	d. br.	d. br.		1
23	17.5	Sen.	2	1,724	886	192	150	135	132	d. br.	l. br.		1
24	17.3		7	1,654	874	199	156	138	145	br.	gr.	8	3
25	17.7		7	1,685	893	190	147	131	135	br.	gr.	3	3
26	17.0		4	1,592	852	188	146	125	112	br.	gr.	2	2
27	17.7		6	1,690	892	184	149	132	136	d. blo.	g. bl.	2	5
28	17.9		5	1,720	915	194	155	140	146	d. br.	d. br.	3	3
29	17.0		4	1,627	852	186	152	134	121	d. br.	g. bl.	1	3
30	17.3		2	1,712	890	199	152	137	143	d. br.	g. bl.	2	1
31	17.2	4	1	1,715	930	190	152	129	142	d. br.	gr.	1	2
32	17.1	4	2	1,739	926	195	150	125	127	d. br.	bl.		1

\*Twin.

°Half.

## 17-year-old boys. Worcester, Mass.—Continued.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
33.....	17.0	Jun.	1	1,704	905	191	144	133	134	d. br.	d. br.	2	1
34.....	17.10	Jun.	2	1,568	880	189	143	121	114	br.	gr.	2	2
35.....	17.0	Jun.	1	1,790	955	191	151	136	151	l. br.	bl.	1	1
36.....	17.3	Jun.	5	1,610	860	183	147	126	128	d. br.	gr.	4	1
37.....	17.11	.....	4	1,725	907	187	150	134	114	br.	l. br.	2	1
38.....	17.4	.....	1	1,676	874	188	152	133	132	d. br.	bl.	1	1
39.....	17.7	.....	1	1,701	863	188	143	130	123	br.	bl.	1	1
40.....	17.2	.....	3	1,647	871	198	145	133	149	br.	br.	2	1
41.....	17.4	2	1	1,655	853	193	151	124	121	d. br.	d. br.	1	1
42.....	17.1	2d yr.	3	1,610	870	188	149	124	108	d. br.	gr.	4	1
43.....	17.10	2d yr.	3	1,738	920	190	151	135	155	d. br.	g. g. bl.	2	1
44.....	17.8	2d yr.	1	1,691	917	194	145	135	149	l. br.	g. g. bl.	.....	.....
45.....	17.4	2d yr.	1	1,664	887	186	155	136	132	d. br.	g. g. bl.	.....	.....
46.....	17.2	.....	1	1,757	911	199	150	137	150	l. br.	g. g. bl.	.....	.....
47.....	17.1	.....	1	1,703	905	192	153	140	149	br.	bl.	1	.....
48.....	17.0	.....	1	1,713	.....	199	139	134	.....	d. br.	d. br.	3	.....
49.....	17.0	4	4	1,576	.....	192	143	127	.....	bla.	d. br.	.....	.....

## ADDITIONAL SERIES.

Number.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.
50.....	17.7	9	1,739	913	471	87	125

## REPEATED MEASUREMENTS.

Number in 16-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.	Number in 16-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.
16.....	17.2	9	1,620	865	450	81	120	23.....	17.10	9	1,662	860	450	81	107
21.....	17.7	9	1,646	860	450	84	130								

## ADDITIONAL MEASUREMENTS.

Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.	Forearm.	Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.	Forearm.
1.....	1,833	116	.....	.....	.....	31.....	1,770	118	.....	.....	.....
2.....	1,800	109	.....	.....	.....	32.....	1,768	109	.....	.....	.....
3.....	1,793	114	.....	.....	.....	33.....	1,783	120	.....	.....	.....
14.....	1,684	108	.....	.....	.....	34.....	1,611	111	.....	.....	.....
16.....	1,777	118	.....	.....	.....	35.....	1,808	118	.....	.....	.....
17.....	1,720	119	.....	.....	.....	36.....	1,686	108	.....	.....	.....
18.....	1,845	124	.....	.....	.....	37.....	1,776	115	.....	.....	.....
19.....	1,777	118	.....	.....	.....	38.....	1,754	123	.....	.....	.....
20.....	1,701	114	.....	.....	.....	39.....	1,734	119	.....	.....	.....
21.....	1,714	114	.....	.....	.....	40.....	1,774	117	.....	.....	.....
22.....	1,743	119	.....	.....	.....	41.....	1,715	116	.....	.....	.....
23.....	1,796	112	.....	.....	.....	42.....	1,604	109	.....	.....	.....
24.....	1,760	114	.....	.....	.....	43.....	1,935	110	.....	.....	.....
25.....	1,773	120	.....	.....	.....	44.....	1,783	120	.....	.....	.....
26.....	1,626	107	.....	.....	.....	45.....	1,719	114	.....	.....	.....
27.....	1,831	123	.....	.....	.....	46.....	1,863	125	.....	.....	.....
28.....	1,770	122	.....	.....	.....	47.....	1,787	114	.....	.....	.....
29.....	1,708	121	.....	.....	.....	49.....	.....	119	190	.....	.....
30.....	1,707	113	.....	.....	.....						

## 18-year-old boys. Worcester, Mass.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
1.	18.7		3	1,800	990	192	152	140		blo.	gr.	3	
2.	18.8		2	1,714	892	185	153	131		d. blo.	gr. bl.		2
3.	18.11		4	1,718	919	193	155	139		d. br. d. blo.	g. bl. l. br.	2	1
4.	18.3		1	1,813	920	195	148	130			l. br.		2
5.	18.7		1	1,725	910	197	147	131		lt.			
6.	18.2		4	1,752	918	193	145	129		br.	gr. bl.		
7.	18.10		3	1,515	782	183	154	134		bla.	d. br.	2	1
8.	18.0		2	1,508	711	188	152	131	103	blo.	l. br.	3	1
9.	18.3		4	1,658	875	193	154	139		l. br.	bl. g. bl.		
10.	18.8	Jun.	2	1,794	920	191	148	136		br.			1
11.	18.0		3	1,721	907	198	153	135			g. bl.	1	1
12.	18.3		8	1,552	835	190	151	134		d. br.	gr. g. br.	4	3
13.	18.2		1	1,824	967	194	160	144		br.	gr.	1	3
14.	18.7		2	1,728	929	195	153	135		d. br.	gr. g. br.	1	
15.	18.0		2	1,586	837	206	162	136		br. rd.	g. br.	2	
16.	18.0		4	1,667	857	191	149	123		d. br.	gr. bl.	1	5
17.	18.0		4	1,672	892	187	147	131		br.	g. bl.	2	
18.	18.6		3	1,648	861	188	147	131		d. br.	bl. g. bl.		2
19.	18.10		4	1,676	872	196	147	126		blo.	bl. g. bl.	2	1
20.	18.6		3	1,725	904	195	146	137		l. br.	bl. g. bl.		
21.	18.7		1	1,690	870	191	149	130		d. br.	l. br.	4	3
22.	18.9	Sen.	4	1,716	915	190	152	133	122	d. br.	gr. l. br.	6	3
23.	18.0	Sen.	9	1,799	922	188	154	133	146	d. br.	gr.	1	2
24.	18.11	Sen.	3	1,622	868	191	148	134	121	d. br.	l. br.	1	
25.	18.10	Sen.	2	1,761	899	191	151	134	131	d. br.	gr.		1
26.	18.10		1	1,690	895	187	149	132		d. br.	bl. g. bl.		
27.	18.4	Sen.	14	1,638	886	182	158	133	122	d. br.	bl. g. bl.	10	4
28.	18.5	Sen.	12	1,716	904	189	142	130	128	d. blo.	bl. g. bl.	5	6
29.	18.0	Sen.	4	1,769	955	205	150	133	150	l. br.	bl. g. bl.	2	1
30.	18.0	Jun.	1	1,640	858	185	144	130		br.	bl. g. bl.		
31.	18.9	Sen.	6	1,658	891	184	154	137	137	br.	br.	3	4
32.	18.3	Sen.	1	1,769	912	188	150	134	149	br.	br.	1	
33.	18.4	3	1	1,696	885	197	151	136	118	d. br.	bl. g. bl.		1
34.	18.1		1	1,688	875	183	154	133	176	br.	br.		1
35.	18.1		1	1,685	883	186	160	137	127	d. br.	gr.	1	
36.	18.8	Jun.	1	1,885	962	190	151	133	142	d. br.	d. br.		1
37.	18.9	Jun.	1	1,676	870	201	153	137	196	d. br.	d. dr.	1	1
38.	18.0		3	1,727	896	192	150	131	190	d. br.	bl.	2	3
39.	18.5		1	1,702	894	187	153	126	109	l. br.	g. bl.	1	
40.	18.6		1	1,746	906	186	154	133	147	d. br.	gr.	4	1
41.	18.16		1	1,685	890	178	153	136	140	d. br.	gr.		
42.	18.11	2d yr.	1	1,712	864	189	143	129	190	d. blo.	bl. g. bl.	1	1
43.	18.1	2d yr.	3	1,657	892	184	160	138	129	bla.	gr.	1	2
44.	18.10		1	1,652	876	196	148	128	193	br.	gr.		
45.	18.1		1	1,771	905	191	148	136	196			1	2
46.	18.11		4	1,749	859	191	151	131	142	d. br.	gr.	1	2
47.	18.11		2		858	201	165	143	124	br.	g. bl.		
48.	18.9	9	2	1,677		189	148	133		d. br.	g. bl.		2
49.	18.0	9		1,593	885				135				

## ADDITIONAL MEASUREMENTS.

Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.	Forearm.	Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.	Forearm.
1.	1,813	125				32.	1,727	119			
2.	1,738	118				33.	1,822	109			
3.	1,730	139				34.	1,740	117			
4.	1,952	121				35.	1,766	115			
5.	1,802	112				36.	1,726	118			
6.	1,830	129				37.	1,953	112			
19.	1,744	115				38.	1,762	112			
20.	1,773	112				39.	1,775	112			
23.	1,787	113				40.	1,741	112			
24.	1,913	124				41.	1,798	111			
25.	1,667	115				42.	1,783	111			
26.	1,829	115				43.	1,825	100			
27.	1,734	113				44.	1,715	121			
28.	1,687	113				45.	1,737	126			
29.	1,753	120				46.	1,846	112			
30.	1,808	121				47.	1,878	116			
31.	1,716	123				48.	1,793	118			

# STATISTICS OF GROWTH.

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## 5-year-old girls. Worcester, Mass.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
1.....	5.11	-----	3	1,025	590	174	140	113	40	l. br.	bl.	1	2
2.....	5.11	-----	3	1,080	557	172	145	114	42	l. br.	g. bl.	1	1
3.....	5.11	-----	3	1,142	631	180	150	125	51	d. br.	bl.	1	1
4.....	5.9	-----	5	1,112	593	168	145	113	43	bl.	d. br.	-----	-----
5.....	5.9	-----	4	1,096	582	185	147	115	46	l. br.	bl.	-----	-----
6.....	5.7	1	1	1,132	616	185	135	110	45	blo.	d. br.	1	1
7.....	5.7	1	2	1,107	620	185	133	109	43	blo.	d. br.	1	1
8.....	5.9	1	5	1,068	604	173	135	107	37	blo.	br.	-----	2
9.....	5.8	-----	2	998	547	169	137	112	35	br.	bl.	-----	-----
10.....	5.10	1	4	1,154	634	166	135	114	48	red br.	gr.	-----	4
11.....	5.10	1	4	1,047	591	168	137	111	42	br.	gr.	2	-----
12.....	5.8	1	3	1,050	588	166	142	110	36	d. br.	gr.	1	1
13.....	5.10	1	1	1,007	543	157	142	109	33	br.	d. br.	-----	2
14.....	5.11	1	1	1,039	581	164	130	105	34	l. br.	l. bl.	-----	-----
15.....	5.11	1	2	1,085	615	177	139	114	46	br.	bl.	-----	1
16.....	5.3	1	-----	1,067	591	173	136	118	34	br.	l. br.	-----	-----
17.....	5.9	1	-----	1,129	617	177	143	115	43	br.	br.	-----	-----
18.....	5.6	1	-----	1,080	612	173	145	113	45	l. br.	l. br.	-----	-----
19.....	5.0	1	-----	1,087	584	170	143	115	42	d. br.	bl.	-----	-----
20.....	5.7	1	4	1,130	612	176	133	114	42	d. blo.	bl.	2	4
21.....	5.9	1	5	1,140	620	174	139	114	40	br.	gr.	1	3
22.....	5.0	1	2	1,007	574	180	139	112	37	d. br.	d. br.	1	-----
23.....	5.10	1	3	1,087	597	171	134	111	40	br.	bl.	1	2
24.....	5.8	1	4	998	574	168	132	108	33	d. br.	d. br.	4	1
25.....	5.8	1	2	1,054	584	169	129	100	35	l. br.	d. br.	1	1
26.....	5.6	1	1	1,050	589	164	130	111	40	d. br.	g. bl.	-----	1
27.....	5.4	1	2	1,033	578	181	138	112	41	d. br.	bl.	1	1
28.....	5.7	1	2	1,000	545	180	136	108	32	blo.	bl.	1	-----
29.....	5.3	1	4	1,045	580	162	134	110	38	d. br.	bl.	2	1
30.....	5.10	1	1	1,083	577	177	139	107	37	br.	gr.	-----	-----
31.....	5.1	1	1	1,071	563	180	141	113	40	br.	bl.	-----	-----
32.....	5.7	1	1	1,058	586	170	132	114	38	br.	d. br.	1	1
33.....	5.7	1	3	1,025	590	170	136	112	40	br.	br.	-----	-----
34.....	5.9	1	5	1,050	581	176	138	112	-----	br.	bl.	4	-----
35.....	5.10	1	3	1,123	620	180	142	112	44	br.	gr.	2	1
36.....	5.4	1	-----	991	562	184	137	105	33	blo.	bl.	1	1
37.....	5.11	1	1	1,100	597	177	139	116	42	flax.	gr.	1	-----
38.....	5.4	1	1	1,181	618	177	132	102	43	blo.	g. bl.	-----	-----
39.....	5.5	1	2	1,125	-----	165	139	114	-----	d. blo.	bl.	1	1
40.....	5.4	1	1	1,085	621	172	140	117	-----	blo.	bl.	1	-----
41.....	5.8	1	-----	1,052	580	-----	-----	-----	38	-----	-----	-----	-----

\* Twin.

## ADDITIONAL MEASUREMENTS.

Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.	Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.
33.....	1,002	88	-----	-----	37.....	1,104	94	-----	-----
34.....	1,027	90	-----	-----	38.....	1,112	90	-----	-----
35.....	1,107	88	-----	-----	39.....	-----	88	141	-----
36.....	999	83	-----	-----	40.....	1,090	81	126	58



## 6-year-old girls. Worcester, Mass.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
1.	6.0		4	1,049	590	166	139	109	42	blo.	bl.	2	1
2.	6.6		2	1,104	637	173	137	117	51	br.	l.br.	2	1
3.	6.11	1	1	1,114	649	172	143	119	54	d.br.	br.	1	
4.	6.6		1	1,089	588	174	143	115	41	blo.	g.bl.	2	2
5.	6.6	1	1	1,080	583	170	140	110	37	blo.	bl.	2	
6.	6.6		7	1,086	643	169	138	112	46	br.	g.bl.	3	3
7.	6.11		1	1,080	635	182	138	110	46	blo.	gr.	1	1
8.	6.1	1	1	1,086	635	177	144	117	45	d.blo.	d.br.	2	2
9.	6.4	1	1	1,077	636	171	137	113	43	d.br.	g.bl.	2	2
10.	6.7	2	2	1,081	593	164	134	115	41	br.	g.bl.	1	4
11.	6.7	2	2	1,070	621	176	134	107	42	d.blo.	gr.	2	
12.	6.8	1	1	1,082	623	168	140	112	43	blo.	g.bl.	1	
13.	6.7	1	3	1,080	612	175	138	110	47	br.	l.br.	1	1
14.	6.7	1	4	1,081	619	170	139	107	45	d.blo.	gr.	2	2
15.	6.3	1	1	1,083	542	172	137	108	44	d.blo.	gr.	1	
16.	6.3	1	11	1,057	590	169	134	112	37	br.	l.br.	3	8
17.	6.4	1	2	1,085	608	178	145	114	45	br.	bl.	1	1
18.	6.2	1	2	1,086	611	178	144	111	43	br.	gr.	1	1
19.	6.8	1	1	1,084	636	178	134	111	45	br.	bl.	1	
20.	6.8	1	1	1,084	598	178	136	115	47	br.	g.br.	1	4
21.	6.6	1	5	1,043	646	180	132	112	49	br.	l.br.	1	5
22.	6.10	2	2	1,070	653	173	133	111	52	d.br.	d.br.	2	1
23.	6.5	1	2	1,069	575	173	135	118	40	d.br.	d.br.	1	1
24.	6.7	1	4	1,086	620	180	142	111	43	d.br.	br.	2	2
25.	6.7	1	4	1,070	598	165	134	109	38	br.	bl.	1	
26.	6.1	1	2	1,015	591	175	134	111	37	l.blo.	l.gr.	1	
27.	6.8	1	3	1,084	628	171	140	115	43	d.br.	bl.	1	4
28.	6.5	1	1	1,080	630	166	138	113	42	br.	br.	1	
29.	6.10	2	3	1,075	666	166	142	113	43	red.	bl.	2	1
30.	6.9	1	3	1,098	653	177	146	117	52	l.br.	bl.		
31.	6.9	1		1,044	629	171	146	114	43	d.br.	bl.		
32.	6.6	1		1,084	581	170	132	115	39	blo.	bl.		
33.	6.1	1		1,066	625	175	142	117	45	d.blo.	bl.		
34.	6.9	1		1,063	600	170	139	112	39	br.	g.bl.		
35.	6.9	1		1,112	597	169	139	119	42	blo.	bl.		
36.	6.3	1		1,103	613	173	139	113	46	br.	bl.		
37.	6.9	1		1,089	589	165	137	112	41	d.br.	d.br.		
38.	6.3	1		1,190	607	172	141	120	54	br.	br.		
39.	6.0	1		1,097	612	165	133	112	41	red.	bl.		
40.	6.3	1		1,146	629	175	143	119	52	br.	br.		
41.	6.3	1		1,133	628	177	136	115	45	br.	bl.		
42.	6.0	1	9	1,102	620	165	140	116	41	d.br.	bl.	7	3
43.	6.9	1	1	1,160	640	182	142	112	42	br.	bl.	1	2
44.	6.7	3	3	1,194	657	170	139	121	49	rd.br.	gr.		
45.	6.8	2	1	1,132	650	170	139	111	45	br.	g.br.	3	
46.	6.10	2	1	1,107	592	173	138	112	41	d.br.	bl.	1	
47.	6.8	2	1	1,180	667	174	146	114	45	br.	gr.		
48.	6.10	2	2	1,096	621	175	136	110	41	l.br.	gr.	1	4
49.	6.5	1	4	1,110	610	172	133	107	40	br.	bl.	2	1
50.	6.10	1	3	1,110	638	174	138	108	41	d.blo.	bl.	1	1
51.	6.0	1	5	1,171	650	174	140	116	50	l.br.	bl.	2	2
52.	6.5	1	5	1,167	638	183	138	113	47	l.br.	l.br.	1	1
53.	6.8	1	1	1,174	639	181	140	116	51	l.br.	l.br.		
54.	6.8	1	9	1,038	594	171	136	107	36	br.	br.	6	2
55.	6.8	1	5	1,141	580	168	133	107	41	br.	bl.	4	2
56.	6.0	1	5	1,113	618	170	134	115	39	l.br.	l.br.	3	2
57.	6.7	1	7	1,106	618	174	135	113	39	br.	br.	4	4
58.	6.0	1	5	1,096	592	164	137	110	34	br.	bl.	2	2
59.	6.0	1	3	1,067	616	172	126	105	39	d.br.	d.br.	1	3
60.	6.1	2	3	1,150	617	175	135	111	42	gold.	g.br.	1	1
61.	6.2	1	2	1,135	613	180	135	109	43	aub.	g.bl.	2	
62.	6.3	1	1	1,175	620	175	136	119	46	l.br.	gr.		
63.	6.5	1	1	1,082	588	169	141	116	42	blo.	gr.	1	
64.	6.6	1	1	1,082	608	174	139	114	39	br.	g.bl.	1	
65.	6.8	1	2	1,139	607	170	139	113	41	l.br.	gr.		1
66.	6.8	1	3	1,162	635	171	133	111	45	br.	g.bl.	2	
67.	6.1	1	3	1,059	590	175	137	110	42	blo.	bl.	2	2
68.	6.3	1	6	1,058	589	175	138	107	42	l.br.	l.br.	3	5
69.	6.4	1	1	1,058	590	174	132	102	35	d.blo.	gr.		1
70.	6.5	1	1	1,031	594	178	137	103	38	l.br.	d.br.	2	
71.	6.0	1	3	1,064	593	175	137	112	40	l.br.	bl.	1	
72.	6.11	1	3	1,108	606	174	139	112	47	gd.br.	bl.	1	1
73.	6.0	1	3	1,146	619	174	134	119	44	blo.	bl.		2
74.	6.8	1	1	1,240	638	167	144	119	56	br.	gr.	4	2
75.	6.8	1	1	1,152	632	171	133	110	53	br.	gr.	2	1
76.	6.6	1	5	1,101	609	179	142	116	46	l.tr.	bl.	2	
77.	6.4		3	1,103	602	167	135	105	43	d.br.	bl.	2	2

\* Twin.

## STATISTICS OF GROWTH.

89

6-year-old girls. Worcester, Mass.—Continued.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
78.....	6.11	2	222	1,186	.....	178	139	117	.....	d. br.	gr.	.....	1
79.....	6.7	1	1	1,060	.....	176	140	112	.....	l. br.	bl.	.....	1
80.....	6.11	1	1	1,152	.....	177	137	112	.....	d. blo.	bl.	.....	2
81.....	6.3	1	1	1,205	.....	174	139	115	.....	d. blo.	l. br.	.....	1
82.....	6.9	1	1	1,102	.....	178	139	116	.....	l. br.	d. br.	.....	2
83.....	6.0	.....	222	1,147	647	185	143	118	.....	d. blo.	bl.	1	.....
84.....	6.0	.....	222	1,084	616	170	136	110	.....	blo.	gr.	.....	1

## ADDITIONAL SERIES.

Number.	Age.	Grade.	Stature.	Height sitting.	Fore-arm.	Breadth of hand.	Weight.
85.....	6.11	2	1,138	598	310	57	41
86.....	.....	1	1,136	665	305	61	45

## REPEATED MEASUREMENTS.

Number in 5-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.	Number in 5-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.
2.....	6.11	2	1,134	623	308	62	50	17.....	6.9	2	1,190	630	310	58	47
4.....	6.3	1	1,180	648	330	63	50	18.....	6.7	1	1,148	625	315	56	50
5.....	6.3	2	1,154	620	310	68	54	21.....	6.9	2	1,202	636	325	56	44
6.....	6.7	1	1,173	620	297	57	49	22.....	6.4	1	1,055	590	270	56	42
7.....	6.7	1	1,167	622	312	55	47	23.....	6.11	1	1,150	615	300	58	44
11.....	6.11	2	1,102	610	300	56	44	24.....	6.9	2	1,158	585	290	56	37
13.....	6.10	.....	1,065	585	290	53	38	25.....	6.5	1	1,131	606	290	54	39
15.....	6.11	.....	1,142	640	305	61	51	26.....	6.9	1	1,056	575	280	53	36
16.....	6.4	1	1,130	610	310	54	39	29.....	6.5	1	1,100	610	290	58	41

## ADDITIONAL MEASUREMENTS.

Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.	Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.
67.....	1,042	91	.....	.....	76.....	1,083	89	.....	.....
68.....	1,044	84	.....	.....	77.....	1,080	91	.....	.....
69.....	1,064	98	.....	.....	78.....	.....	91	142	.....
70.....	1,054	88	.....	.....	79.....	.....	84	140	.....
71.....	1,034	88	.....	.....	80.....	.....	95	147	.....
72.....	1,127	90	.....	.....	81.....	.....	92	139	.....
73.....	1,123	90	.....	.....	82.....	.....	95	142	.....
74.....	1,284	98	.....	.....	83.....	1,131	87	147	64
75.....	1,112	93	.....	.....	84.....	1,057	85	130	58

## 7-year-old girls. Worcester, Mass.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
1.	7.5		2	1,187	632	176	141	120	51	l. br.	bl.	2	1
2.	7.5		4	1,069	599	172	141	117	46	l. br.	bl.	2	2
3.	7.1		2	1,161	644	170	140	114	42	d. br.	g. bl.	2	2
4.	7.9		2	1,226	655	170	142	118	54	l. br.	d. br.	2	3
5.	7.5	1	1	1,155	646	187	139	117	51	br.	d. br.	2	3
6.	7.9		1	1,213	658	171	144	114	50	br.	d. br.	2	1
7.	7.1		1	1,220	658	181	145	118	48	br.	d. br.	1	1
8.	7.1	2	1	1,182	647	174	141	113	52	gold.	bl.	1	1
9.	7.8		1	1,301	729	188	133	113	61	d. blo.	d. br.	1	1
10.	7.1		3	1,086	609	166	138	108	36	blo.	bl.	2	1
11.	7.6	3	1	1,231	646	183	137	114	47	blo.	g. bl.	1	2
12.	7.10		1	1,188	640	172	140	119	48	br.	d. br.	1	2
13.	7.1		1	1,156	632	172	136	112	47	d. br.	d. br.	1	2
14.	7.1	1	2	1,143	631	168	148	112	47	rd. br.	bl.	1	2
15.	7.8		2	1,185	638	176	135	105	45	blo.	bl.	1	2
16.	7.1		4	1,132	627	183	140	115	49	blo.	bl.	3	1
17.	7.8		1	1,182	659	176	146	120	50	red.	bl.	1	2
18.	7.11		1	1,172	653	171	139	112	50	br.	bl.	3	2
19.	7.1		3	1,157	641	179	138	111	49	d. br.	gr.	3	1
20.	7.1		2	1,253	659	179	135	111	51	br.	gr.	2	1
21.	7.6		4	1,223	684	173	141	118	56	br.	l. br.	4	1
22.	7.8		1	1,211	671	168	138	111	51	blo.	bl.	1	3
23.	7.7		5	1,177	619	176	142	119	52	d. br.	l. br.	1	3
24.	7.9		2	1,217	610	174	137	117	59	d. br.	bl.	1	1
25.	7.4		3	1,204	614	173	145	117	47	br.	br.	1	5
26.	7.8		3	1,227	644	170	143	116	47	d. blo.	gr.	2	2
27.	7.3		4	1,134	617	160	142	112	41	d. blo.	br.	2	2
28.	7.8		1	1,187	636	176	142	118	51	blo.	bl.	1	2
29.	7.8		2	1,115	581	188	148	118	76	red. br.	br.	1	2
30.	7.8		1	1,104	591	166	128	107	41	red.	gr.	1	2
31.	7.5		2	1,112	598	164	140	118	43	d. br.	bl.	1	1
32.	7.4		1	1,131	611	164	141	113	43	d. br.	d. br.	1	1
33.	7.8		2	1,211	657	186	139	117	56	br.	d. br.	1	2
34.	7.5		5	1,142	617	175	141	117	47	br.	br.	2	3
35.	7.5		1	1,198	676	173	141	116	58	br.	bl.	1	2
36.	7.7		1	1,201	677	178	142	118	54	br.	g. bl.	2	2
37.	7.4		1	1,040	583	175	129	110	38	br.	d. br.	1	2
38.	7.10		1	1,120	629	164	135	111	42	br.	bl.	2	2
39.	7.3		1	1,218	657	168	136	113	55	br.	bl.	1	1
40.	7.2		1	1,100	610	170	144	118	44	br.	g. bl.	1	2
41.	7.8		3	1,215	657	175	138	119	60	br.	gr.	1	2
42.	7.7		1	1,212	657	178	127	118	46	l. br.	gr.	1	1
43.	7.7		2	1,192	660	178	140	114	56	br.	gr.	1	1
44.	7.4		1	1,159	625	175	144	117	48	blo.	gr.	1	1
45.	7.9		4	1,134	616	168	137	113	39	l. br.	bl.	3	2
46.	7.3		6	1,200	677	175	138	113	54	br.	gr.	1	2
47.	7.7		1	1,082	638	179	135	112	45	blo.	bl.	1	2
48.	7.8		1	1,222	681	173	139	114	51	br.	bl.	1	2
49.	7.1		4	1,096	576	176	137	110	40	br.	gr.	2	2
50.	7.1		1	1,212	653	177	142	115	51	br.	d. br.	1	2
51.	7.5		2	1,192	663	168	140	120	54	br.	gr.	2	2
52.	7.9		2	1,177	643	178	142	110	46	br.	bl.	2	2
53.	7.0		2	1,127	624	182	139	115	45	br.	bl.	2	5
54.	7.4		1	1,122	596	167	140	118	41	br.	br.	2	4
55.	7.0		5	1,109	624	167	142	113	38	br.	br.	1	1
56.	7.8		1	1,254	640	175	140	119	61	br.	bl.	1	1
57.	7.6		2	1,169	657	172	135	108	42	blo.	bl.	1	1
58.	7.1		1	1,083	601	170	140	110	42	l. br.	d. br.	1	2
59.	7.7		3	1,193	655	194	144	116	45	d. br.	br.	1	2
60.	7.9		3	1,197	656	169	141	115	53	br.	br.	2	1
61.	7.0		5	1,229	689	180	141	117	53	br.	bl.	2	2
62.	7.11		6	1,167	647	179	143	123	49	red.	bl.	1	1
63.	7.3		4	1,202	665	182	141	119	52	br.	gr.	1	3
64.	7.7		1	1,145	620	178	137	115	45	br.	bl.	4	2
65.	7.9		6	1,240	655	175	145	118	49	blo.	bl.	4	2
66.	7.3		6	1,138	650	179	135	111	46	br.	d. br.	4	6
67.	7.8		8	1,110	643	174	134	115	42	d. br.	d. br.	1	1
68.	7.0		1	1,072	598	170	135	109	37	d. br.	d. br.	1	1
69.	7.2		1	1,036	580	169	135	114	41	br.	g. bl.	1	1
70.	7.1		1	1,088	587	170	130	105	37	d. br.	bl.	1	1
71.	7.11		2	1,204	646	173	141	112	48	blo.	bl.	2	2
72.	7.6		3	1,174	638	169	143	112	45	d. blo.	bl.	2	2
73.	7.9		3	1,140	626	174	147	119	44	blo.	bl.	2	2
74.	7.4		2	1,190	693	178	136	111	47	br.	bl.	2	2
75.	7.6		2	1,203	690	176	137	118	51	blo.	bl.	1	1
76.	7.7		1	1,198	644	179	144	116	52	blo.	bl.	1	1
77.	7.8		3	1,197	630	176	144	117	45	br.	gr.	1	2
78.	7.0		1	1,185	627	173	137	111	39	br.	d. br.	1	2
79.	7.4		5	1,283	684	176	145	116	53	br.	gr.	2	2

## 7-year-old girls. Worcester, Mass.—Continued.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
80.....	7.5	1	2	1,123	622	173	139	117	42	d. br.	gr.	2	...
81.....	7.10	1	1	1,109	620	165	139	112	37	br.	gr.	...	...
82.....	7.0	1	5	1,101	622	173	139	119	43	d. br.	d. br.	1	3
83.....	7.5	1	1	1,111	615	173	136	111	41	l. br.	g. bl.	...	...
84.....	7.4	1	1	1,181	623	167	140	113	43	br.	gr.	1	1
85.....	7.5	1	1	1,208	620	167	141	118	47	blo.	bl.	...	...
86.....	7.10	1	2	1,085	628	173	136	108	42	d. br.	d. br.	1	2
87.....	7.10	3	3	1,294	...	175	135	115	...	d. br.	l. br.	1	4
88.....	7.4	3	1	1,257	...	188	139	118	...	d. br.	d. br.	2	1
89.....	7.11	1	1	1,205	...	172	137	114	...	d. blo.	g. bl.	2	0
90.....	7.8	2	1	1,166	...	178	136	112	...	d. br.	d. br.	...	...
91.....	7.9	2	2	1,213	...	177	139	113	...	blo.	gr.	...	...
92.....	7.6	2	2	1,215	...	174	134	113	...	d. br.	gr.	1	1
93.....	7.9	1	2	1,215	...	166	127	111	...	l. br.	bl.	3	1
94.....	7.3	1	1	1,173	...	188	140	113	...	l. br.	bl.	2	2
95.....	7.6	1	8	1,083	...	178	137	113	...	d. br.	bl.	5	3
96.....	7.11	1	...	1,117	...	172	134	114	...	red br.	gr.	...	...
97.....	7.4	1	2	1,125	...	185	136	115	...	d. br.	gr.	1	...
98.....	7.6	1	4	1,135	...	179	137	112	...	blo.	g. bl.	2	1
99.....	7.7	2	3	1,211	...	188	143	125	...	d. br.	bl.	1	2
100.....	7.0	...	1	1,180	643	182	137	114	...	red.	l. br.	...	3
101.....	7.6	3	4	1,085	...	172	143	111	...	d. br.	g. bl.	1	...

## ADDITIONAL SERIES.

Number.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.	Number.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.
102.....	7.4	...	1,152	635	295	54	44	104.....	7.7	2	1,225	685	315	53	51
103.....	7.5	2	1,152	610	301	59	47								

## REPEATED MEASUREMENTS.

Number in 6-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.	Number in 6-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.
1.....	7.0	2	1,085	625	310	54	46	32.....	7.0	2	1,148	585	300	57	43
6.....	7.5	2	1,202	670	330	61	53	33.....	7.0	2	1,168	635	320	61	43
7.....	7.11	2	1,169	633	335	60	49	34.....	7.9	2	1,135	610	310	53	43
8.....	7.1	2	1,183	653	307	59	48	35.....	7.10	2	1,173	620	305	53	43
9.....	7.3	1	1,187	645	302	58	48	36.....	7.10	1	1,151	625	295	59	43
11.....	7.8	2	1,164	780	305	60	46	37.....	7.3	2	1,267	685	335	64	61
13.....	7.5	2	1,176	655	315	60	51	38.....	7.0	1	1,165	650	295	56	45
15.....	7.2	2	1,109	595	305	55	39	39.....	7.0	1	1,197	645	330	62	53
16.....	7.3	1	1,109	595	295	55	41	40.....	7.4	1	1,200	645	310	58	49
18.....	7.10	2	1,187	625	320	57	50	41.....	7.1	1	1,145	620	310	58	44
19.....	7.3	2	1,259	660	345	61	54	42.....	7.8	4	1,249	675	330	63	56
21.....	7.8	1	1,209	675	320	57	58	43.....	7.8	3	1,198	670	305	60	49
23.....	7.5	...	1,135	625	305	60	47	44.....	7.8	3	1,172	605	325	60	47
24.....	7.6	...	1,150	630	320	57	47	45.....	7.10	3	1,223	680	315	60	54
25.....	7.1	...	1,113	620	298	54	40	46.....	7.6	3	1,178	630	315	59	46
26.....	7.1	...	1,070	605	280	53	40	47.....	7.6	2	1,108	635	320	60	44
28.....	7.6	...	1,185	655	315	56	48	48.....	7.6	2	1,247	675	320	62	53
29.....	7.11	2	1,227	670	310	58	45	49.....	7.0	1	1,108	680	290	58	39
30.....	7.9	2	1,250	670	325	60	57								

Number in 5-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.	Number in 5-year series.	Age.	Grade.	Stature.	Height sitting.	Foreman.	Breadth of hand.	Weight.
1.....	7.1	1	1,077	590	295	56	43	3.....	7.0	2	1,203	671	315	60	54

## 7-year-old girls. Worcester, Mass.—Continued.

## ADDITIONAL MEASUREMENTS.

Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.	Forearm.	Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.	Forearm.
84	1,172	97				93		93	152		
85	1,219	94				94		95	140	61	
86	1,082	91				95		94	125	58	
87		93	137			96		97	147	61	
88		93	147			97		98	126	57	
89		92	147			98		91	142	55	
90		101	155			99		96	145	63	
91		90	146			100	1,182	95	134	58	
92		95	145			101		150	94	53	286

## 8-year-old girls. Worcester, Mass.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
1	8.9		2	1,225	654	175	143	120	53	blo.	g. bl.		1
2	8.10	4	4	1,228	652	180	147	118	55	blo.	bl.	2	2
3	8.9	4	2	1,253	670	183	145	116	53	br.	g. bl.	1	1
4	8.6		1	1,198	673	183	137	113	49	blo.	bl.	1	1
5	8.6		6	1,203	685	180	142	119	56	d. br.	g. bl.	2	2
6	8.6		4	1,232	678	181	140	117	57	br.	g. br.	1	1
7	8.8		5	1,246	679	179	134	112	51	d. blo.	g. br.	4	1
8	8.11	2	2	1,196	661	182	141	118	55		g. br.	1	1
9	8.11		1	1,204	658	170	136	111	51	blo.	bl.	1	4
10	8.5		2	1,185	626	169	122	107	45	blo.	g. bl.	2	2
11	8.11		2	1,240	680	173	143	116	53	d. blo.	d. br.	3	3
12	8.8		5	1,225	654	176	135	114	44	br.	br.	1	1
13	8.11		9	1,255	668	179	146	118	58	d. br.	l. br.	1	1
14	8.0		7	1,283	703	175	143	115	60	br.	g. bl.	3	3
15	8.8		2	1,191	656	180	136	110	47	blo.	g. bl.	1	2
16	8.2		2	1,234	668	168	140	112	52	red.	bl.	3	
17	8.5		1	1,163	657	173	132	109	48	blo.	gr.		
18	8.4		3	1,119	619	169	122	110	46	g. br.	gr.	2	
19	8.4	2	3	1,141	648	169	141	113	50	blo.	bl.	1	1
20	8.1		3	1,195	639	183	148	115	48	d. blo.	d. br.	2	2
21	8.1	1	2	1,254	696	175	149	119	57	br.	d. br.	1	1
22	8.11	4	3	1,360	709	180	141	118	79	br.	gr.	3	
23	8.10	3	1	1,237	682	170	136	119	48	d. blo.	gr.	3	1
24	8.7	3	5	1,252	670	161	140	115	53	br.	bl.	2	4
25	8.5	3	1	1,240	668	175	141	113	55	br.	l. br.	2	2
26	8.10	3	2	1,135	612	179	138	104	43	br.	br.	2	2
27	8.7	2	2	1,236	648	177	130	113	47	d. br.	bl.	1	1
28	8.3	2	1	1,240	654	179	149	122	51	d. blo.	gr.	1	1
29	8.1	2	1	1,224	650	179	138	119	56	d. blo.	bl.	1	1
30	8.3	2	4	1,241	670	175	140	114	53	d. br.	l. bl.	1	2
31	8.8	2	1	1,197	626	175	148	114	49	br.	br.	2	1
32	8.5	2	1	1,191	643	157	147	112	45	d. blo.	bl.	1	1
33	8.1	2	1	1,164	633	178	135	106	45	d. blo.	bl.		
34	8.2	2	3	1,167	640	181	139	112	41	blo.	l. br.	2	
35	8.8	3	2	1,221	650	165	144	114	51	br.	bl.	3	5
36	8.11	2	1	1,236	671	173	146	115	47	br.	bl.	3	
37	8.4	1	3	1,293	705	180	142	120	66	br.	br.	3	3
38	8.4	1	2	1,110	620	160	133	115	50	br.	br.	2	2
39	8.4	1	2	1,100	605	155	136	110	42	br.	br.	1	1
40	8.5	1	1	1,178	630	165	141	117	44	br.	gr.	1	1
41	8.4	5	5	1,380	720	165	142	120	60	d. br.	bl.	2	2
42	8.0	3	5	1,282	672	174	141	118	62	br.	g. bl.	3	3
43	8.7	3	1	1,253	671	179	142	118	60	br.	bl.	1	1
44	8.9		4	1,257	698	176	134	110	48	blo.	bl.		
45	8.3	3	4	1,120	610	170	142	119	50	br.	bl.	2	2
46	8.10	3	4	1,257	688	186	146	121	63			2	1
47	8.1	2	1	1,239	690	178	141	113	55	br.	br.	2	2
48	8.3	2	2	1,258	680	177	143	117	51	br.	bl.		2

\* Twin brother.

## 8-year-old girls. Worcester, Mass.—Continued.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
49.....	8.0	2	2	1,188	650	178	145	114	51	d. br.	bl.	1	1
50.....	8.7	2	1	1,248	680	177	135	119	53	d. br.	bl.	2	3
51.....	8.11	2	1	1,124	633	170	136	112	41	l. br.	bl.	2	3
52.....	8.5	2	5	1,221	679	170	145	121	53	br.	bl.	1	2
53.....	8.7	2	3	1,115	611	175	141	111	39	blo.	bl.	1	2
54.....	8.0	2	1	1,234	672	172	143	122	54	l. br.	bl.	1	1
55.....	8.2	2	1	1,202	653	171	141	113	51	blo.	g. bl.	1	1
56.....	8.6	2	1	1,255	666	180	148	119	55	d. br.	bl.	1	1
57.....	8.3	2	1	1,253	664	179	143	123	56	br.	br.	1	1
58.....	8.6	2	2	1,205	653	181	141	117	54	d. br.	g. br.	1	1
59.....	8.3	2	2	1,085	603	162	128	103	32	br.	bl.	3	3
60.....	8.2	2	2	1,214	665	170	145	113	55	br.	bl.	5	2
61.....	8.10	4	4	1,223	670	184	144	124	45	br.	bl.	2	2
62.....	8.7	2	2	1,221	640	190	141	122	55	d. br.	gr.	1	1
63.....	8.9	2	3	1,185	644	175	140	122	51	d. blo.	g. bl.	1	1
64.....	8.4	2	1	1,184	606	170	141	123	46	br.	br.	1	1
65.....	8.0	2	1	1,240	650	166	133	115	51	d. br.	d. br.	1	1
66.....	8.8	2	2	1,181	648	181	143	107	46	d. br.	br.	1	1
67.....	8.1	2	2	1,227	655	170	138	115	50	br.	bl.	1	1
68.....	8.5	2	1	1,240	654	176	143	120	55	d. br.	br.	1	1
69.....	8.4	2	2	1,133	614	170	145	110	47	br.	gr.	2	2
70.....	8.9	2	2	1,332	706	181	130	111	63	d. br.	d. br.	1	3
71.....	8.1	2	3	1,240	675	174	141	121	55	br.	bl.	2	2
72.....	8.1	1	1	1,107	586	170	135	108	41	br.	g. bl.	1	1
73.....	8.0	1	1	1,118	596	179	138	109	42	br.	gr.	1	1
74.....	8.5	1	1	1,180	633	179	146	118	47	br.	br.	2	2
75.....	8.11	5	5	1,330	716	178	136	117	72	br.	gr.	3	2
76.....	8.5	3	3	1,218	622	175	143	118	52	br.	g. bl.	1	1
77.....	8.3	3	3	1,273	672	176	140	114	50	blo.	g. bl.	1	5
78.....	8.8	3	5	1,248	652	175	145	119	55	br.	l. br.	3	1
79.....	8.9	3	1	1,285	688	179	137	118	55	blo.	bl.	1	1
80.....	8.4	2	2	1,181	623	174	146	121	55	br.	br.	1	1
81.....	8.0	2	3	1,218	661	178	143	118	57	l. blo.	bl.	3	2
82.....	8.7	2	1	1,211	622	176	145	117	49	blo.	bl.	1	1
83.....	8.0	1	1	1,164	632	176	138	112	41	br.	bl.	1	1
84.....	8.1	1	1	1,164	622	165	135	107	46	d. br.	d. br.	1	3
85.....	8.8	3	3	1,276	676	183	138	120	55	d. blo.	g. br.	1	1
86.....	8.11	3	1	1,229	654	175	136	117	46	d. blo.	g. bl.	2	2
87.....	8.4	2	5	1,254	682	182	133	111	47	br.	d. br.	2	2
88.....	8.2	2	2	1,206	643	170	142	117	46	d. br.	l. br.	1	1
89.....	8.1	2	3	1,174	617	167	138	111	43	l. br.	bl.	1	1
90.....	8.8	2	2	1,224	678	170	130	118	48	l. br.	bl.	1	1
91.....	8.9	3	1	1,278	672	172	143	116	52	d. br.	gr.	2	2
92.....	8.10	1	1	1,222	644	184	136	121	48	blo.	bl.	2	3
93.....	8.0	1	2	1,178	606	166	142	121	42	blo.	bl.	1	1
94.....	8.6	2	1	1,237	657	179	135	118	48	l. br.	d. br.	1	1
95.....	8.6	3	3	1,253	671	171	140	119	49	d. br.	l. br.	1	1
96.....	8.8	3	3	1,263	683	183	146	120	50	blo.	bl.	2	2
97.....	8.7	4	4	1,296	706	184	142	117	51	d. br.	l. br.	1	1
98.....	8.6	4	4	1,322	730	173	143	117	50	d. br.	l. br.	2	2
99.....	8.8	4	4	1,240	690	178	136	108	48	d. br.	bl.	1	3
100.....	8.7	4	4	1,172	640	180	131	115	45	blo.	d. br.	2	2
101.....	8.8	4	4	1,245	695	187	137	116	48	l. br.	l. br.	1	3
102.....	8.11	4	1	1,261	705	175	137	114	47	d. br.	d. br.	1	1
103.....	8.7	4	4	1,222	672	180	143	123	50	d. blo.	bl.	1	1
104.....	8.7	4	4	1,155	622	172	147	125	48	d. br.	d. br.	2	2
105.....	8.4	3	3	1,264	694	174	140	120	49	d. br.	bl.	1	1
106.....	8.6	3	2	1,215	655	172	141	116	48	d. br.	gr.	3	1

## ADDITIONAL SERIES.

Number.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.	Number	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.
107.....	8.2	3	1,127	630	295	62	45	111.....	8.10	2	1,230	670	325	62	51
108.....	8.2	3	1,154	630	313	56	43	112.....	8.3	1	1,208	590	310	59	44
109.....	8.1	2	1,182	660	305	57	55	113.....	8.6	2	1,262	685	345	57	57
110.....	8.7	3	1,243	690	340	60	57	114.....	8.2	2	1,164	640	310	54	46

## 8-year-old girls. Worcester, Mass.—Continued.

## REPEATED MEASUREMENTS.

Number in 7-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.	Number in 7-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.
2	8.6	2	1,144	625	310	58	47	35	8.6	---	1,280	690	430	66	56
4	8.10	2	1,273	690	345	61	60	37	8.4	---	1,115	620	310	59	44
5	8.10	1	1,225	665	345	64	54	38	8.10	---	1,156	625	305	69	47
7	8.11	3	1,298	682	343	61	56	39	8.3	---	1,287	685	350	60	58
9	8.8	4	1,370	750	366	61	69	40	8.1	---	1,137	635	295	58	49
10	8.1	3	1,153	622	313	56	40	41	8.9	---	1,276	670	330	64	65
11	8.5	4	1,278	672	350	62	57	42	8.8	3	1,283	670	345	59	51
13	8.2	2	1,220	654	327	61	50	43	8.8	---	1,269	675	330	64	64
14	8.4	2	1,182	645	330	59	49	44	8.4	3	1,220	630	305	60	51
15	8.6	2	1,240	650	331	58	49	45	8.3	3	1,194	630	330	59	40
16	8.2	2	1,180	635	315	55	50	46	8.9	3	1,322	705	355	62	58
17	8.8	2	1,242	671	342	62	58	47	8.6	---	1,149	655	285	57	56
19	8.1	2	1,217	662	328	59	55	49	8.1	3	1,131	625	305	59	44
20	8.11	4	1,301	685	355	64	55	50	8.11	---	1,275	680	335	64	58
21	8.8	4	1,301	710	335	61	69	51	8.5	3	1,254	700	350	66	60
22	8.6	4	1,265	710	330	66	56	52	8.9	3	1,214	650	325	59	49
23	8.8	3	1,243	690	335	65	55	54	8.5	2	1,162	630	310	56	44
24	8.10	3	1,270	770	335	62	62	56	8.5	4	1,297	690	350	61	57
25	8.2	3	1,260	670	340	60	50	57	8.5	---	1,222	670	315	59	45
26	8.9	3	1,269	680	330	60	62	58	8.1	3	1,148	630	295	58	47
27	8.8	3	1,137	665	300	58	46	59	8.3	3	1,234	655	325	57	47
28	8.8	3	1,244	775	325	60	54	63	8.3	2	1,257	680	325	62	56
29	8.0	3	1,387	735	365	60	91	65	8.10	---	1,307	680	340	63	56
30	8.6	2	1,159	625	315	58	43	66	8.4	---	1,246	660	320	61	50
32	8.5	2	1,196	635	320	58	44	67	8.9	2	1,165	640	315	58	45
34	8.4	---	1,196	640	325	60	54	68	8.5	---	1,172	630	330	56	47

Number in 6-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.	Number in 6-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.
43	8.1	2	1,216	620	320	61	46	55	8.10	1	1,196	640	310	60	46
48	8.0	3	1,180	645	315	58	44								

## ADDITIONAL MEASUREMENTS.

Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.	Forearm.	Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.	Forearm.
84	1,156	95	---	---	---	96	---	141	---	---	---
85	---	100	152	---	---	97	1,284	96	157	---	---
86	---	94	142	---	---	98	1,298	100	148	---	---
87	---	102	150	---	---	99	1,242	100	138	---	---
88	---	93	156	---	---	100	---	89	150	61	---
89	---	94	154	---	---	101	---	96	150	61	---
90	---	94	154	---	---	102	---	91	144	64	---
91	---	92	154	---	---	103	---	89	144	66	---
92	---	92	159	---	---	104	---	98	162	56	---
93	---	95	141	---	---	105	---	91	154	61	---
94	---	103	143	60	---	106	---	89	142	60	---
95	---	103	149	64	---						345

## 9-year-old girls. Worcester, Mass.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
1	9.8		1	1,296	687	166	143	117	62	l. br.	bl.		
2	9.9		2	1,334	704	168	184	114	58	d. br.	d. br.	1	2
3	9.8	4	2	1,302	674	183	144	118	54	red.	bl.	1	1
4	9.1		3	1,237	657	179	144	115	53	blo.	gr.	2	3
5	9.3		3	1,298	698	190	181	119	60	br.	gr.	1	1
6	9.11		3	1,380	726	183	150	125	72	red.	gr.	2	2
7	9.0	4	2	1,329	687	186	137	117	62	br.	bl.	1	1
8	9.11	4	6	1,242	679	169	140	109	52	blo.	gr.	1	7
9	9.4		3	1,352	717	182	140	121	70	d. br.	l. br.	1	2
10	9.8		3	1,246	675	176	143	110	53	br.	g. bl.	3	1
11	9.7	4	2	1,290	672	174	147	116	54	br.	br.	2	
12	9.1	4	1	1,296	709	171	148	125	69	br.	gr.		
13	9.8	3	1	1,299	677	179	137	120	56	br.	l. br.		
14	9.2	3	1	1,151	631	162	141	117	44	d. br.	d. br.		
15	9.6	3	4	1,351	736	182	139	116	71	l. br.	bl.	1	3
16	9.8		3	1,305	696	178	137	113	62	br.	br.	2	
17	9.5		2	1,243	663	181	142	115	62	br.	g. bl.	3	1
18	9.1	3	1	1,168	635	177	143	116	55	l. br.	bl.		1
19	9.10	3	2	1,145	606	169	136	113	41	blo.	bl.		1
20	9.6	3	3	1,243	656	164	134	113	51	blo.	bl.	1	1
21	9.1		2	1,363	751	175	147	124	90	l. br.	g. bl.	1	
22	9.0		1	1,194	643	172	135	116	42	br.	l. br.		
23	9.3		1	1,198	646	170	141	116	50	br.	bl.	1	
24	9.2		2	1,227	658	171	144	120	50	blo.	g. bl.	1	
25	9.1		1	1,273	676	173	137	115	57	br.	d. br.		
26	9.9	2	5	1,262	674	171	130	109	56	br.	bl.	3	3
27	9.0		7	1,281	707	178	139	117	64	br.	bl.	3	3
28	9.4	2	2	1,156	655	183	151	112	49	blo.	gr.	2	1
29	9.9		5	1,263	687	173	128	117	61	black.	d. br.	2	2
30	9.7	4	3	1,249	660	181	146	119	55	d. blo.	gr.		
31	9.9	4	2	1,265	645	174	147	114	52	d. blo.	gr.	1	3
32	9.11	3	5	1,258	650	176	141	118	62	br.	g. br.	2	2
33	9.5	2	4	1,266	682	178	143	117	62	d. br.	bl.	3	3
34	9.3	2	2	1,283	662	173	142	120	58	br.	bl.	1	
35	9.6	4	1	1,321	685	182	144	121	63	blo.	bl.		
36	9.9	4	3	1,292	700	184	139	116	68	br.	gr.		3
37	9.8	4	2	1,290	695	170	139	117	55	blo.	bl.	1	
38	9.10	4	1	1,253	664	178	142	126	49	blo.	bl.	2	
39	9.1	3	1	1,328	677	187	150	127	68	br.	br.	1	2
40	9.1	2	9	1,296	710	172	143	118	55	blo.	bl.	6	4
41	9.2	2	2	1,125	631	172	135	114	40	br.	d. br.	3	
42	9.4	2	3	1,276	709	176	145	126	58	br.	bl.	3	4
43	9.1	2	3	1,291	688	168	132	111	51	l. br.	gr.	3	5
44	9.7	4	9	1,401	757	179	141	121	80	d. blo.	bl.	4	5
45	9.8	4	1	1,343	717	175	148	125	63	d. br.	bl.	3	1
46	9.9	4	4	1,364	691	182	144	125	64	red.	bl.	3	1
47	9.4	4	1	1,232	678	177	142	117	56	br.	gr.		
48	9.4	4	3	1,282	692	184	139	115	78	d. br.	bl.	2	1
49	9.0	4	1	1,356	715	171	130	115	57	d. br.	bl.		
50	9.5	4	3	1,402	742	182	138	119	79	d. br.	br.	1	1
51	9.3		2	1,333	711	177	138	115	65	blo.	bl.	2	1
52	9.9		3	1,245	697	172	145	114	55	blo.	bl.		2
53	9.2	3	1	1,258	679	181	143	112	52	blo.	bl.	1	
54	9.8	4	7	1,308	696	177	143	117	63	d. br.	bl.	2	5
55	9.7	4	1	1,222	652	182	139	117	56	br.	bl.		
56	9.9	4	2	1,272	661	176	144	119	64	br.	g. bl.	2	1
57	9.11	4	3	1,328	703	182	141	120	62	br.	bl.	2	3
58	9.8	3	1	1,227	662	171	143	118	50	br.	bl.	2	2
59	9.4	3	2	1,296	693	177	140	116	59	l. br.	bl.		1
60	9.7	3	1	1,195	656	179	142	118	49	br.	gr.		
61	9.0	2	3	1,225	675	178	142	117	58	l. br.	gr.	1	1
62	9.7	1	15	1,156	641	165	129	110	46	br.	br.	4	12
63	9.10	5	4	1,245	674	181	145	114	54	br.	bl.	3	2
64	9.1	4	2	1,321	673	176	145	115	57	br.	br.		1
65	9.0	4	4	1,253	658	177	134	114	53	blo.	bl.	3	
66	9.4	4	2	1,341	703	193	141	122	73	br.	g. bl.	1	1
67	9.6	3	2	1,293	672	177	136	112	58	blo.		2	
68	9.3	3	4	1,243	665	175	136	114	52	l. br.	g. bl.	1	3
69	9.3	2	3	1,208	612	171	138	112	48	br.	br.	3	
70	9.2	2	1	1,250	674	181	146	120	51	br.	br.		
71	9.11	4	4	1,290	660	167	137	116	49	br.	br.	6	2
72	9.5	4	6	1,244	693	172	137	112	55	br.	br.	3	2
73	9.7	4	2	1,170	626	162	136	118	45	d. br.	d. br.	4	1
74	9.8	4	8	1,258	720	181	139	120	65	br.	br.	4	3
75	9.8	4	1	1,265	650	177	143	120	52	blo.	g. bl.		1
76	9.8	4	1	1,277	685	179	143	122	55	br.	bl.		1
77	9.0	4	2	1,302	733	180	145	130	80	d. br.	d. br.	1	2

\*Twin sister.



## 9-year-old girls. Worcester, Mass.—Continued.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
78	9.0	4	8	1,208	685	172	139	116	48	red br	gr.	3	5
79	9.3	3	3	1,245	687	188	141	119	57	blo.	bl.	2	1
80	9.6	3	3	1,211	684	177	142	120	51	d. blo.	bl.	2	2
81	9.1	3	3	1,255	685	173	138	124	52	d. br.	d. br.	1	2
82	9.2	3	3	1,312	690	170	133	118	55	br.	br.	2	...
83	9.6	3	3	1,268	688	171	142	119	53	br.	br.	...	...
84	9.10	3	3	1,314	699	178	142	118	72	d. br.	bl.	3	3
85	9.3	3	3	1,195	685	177	145	109	48	br.	g. br.	1	1
86	9.9	3	3	1,194	681	177	140	111	49	br.	bl.	...	...
87	9.7	3	3	1,229	680	157	130	110	49	d. br.	d. gr.	1	2
88	9.0	3	3	1,287	675	176	136	115	54	br.	gr.	...	...
89	9.9	3	3	1,287	734	169	139	108	60	d. br.	gr.	1	1
90	9.4	3	3	1,310	685	175	145	122	65	br.	gr.	3	3
91	9.6	4	4	1,327	...	181	143	116	...	d. blo.	bl.	...	2
92	9.11	4	4	1,265	...	169	132	118	...	d. br.	bl.	1	2
93	9.2	4	4	1,377	...	177	141	121	...	d. br.	l. br.	...	...
94	9.3	4	4	1,235	...	169	132	118	...	d. br.	l. br.	2	1
95	9.6	3	3	1,213	...	164	138	112	...	d. br.	bl.	3	1
96	9.7	3	3	1,221	...	171	130	112	...	red.	bl.	1	1
97	9.5	4	4	1,276	...	178	142	120	...	d. br.	d. br.	1	3
98	9.5	4	4	1,276	...	186	146	118	...	l. br.	gr.	2	3
99	9.5	3	3	1,285	...	170	149	121	...	d. br.	gr.	1	1
100	9.11	2	2	1,181	...	187	131	110	...	d. br.	l. br.	...	...
101	9.6	4	4	1,186	...	178	137	113	...	l. br.	d. gr.	4	4
102	9.9	4	4	1,280	...	187	141	123	...	d. br.	d. br.	3	2
103	9.2	4	4	1,247	686	173	140	109	...	d. br.	d. br.	3	1
104	9.10	4	4	1,251	681	181	143	118	...	l. br.	l. br.	1	1
105	9.11	4	4	1,284	685	178	142	120	...	blo.	bl.	4	4
106	9.9	4	4	1,245	688	175	141	112	...	d. br.	gr.	3	3
107	9.11	4	4	1,322	700	186	146	118	...	l. br.	l. br.	1	1
108	9.4	4	4	1,280	...	182	139	120	...	d. br.	gr.	4	...
109	9.3	4	4	1,214	...	182	140	111	...	d. br.	l. br.	...	2
110	9.10	4	4	1,245	...	173	141	119	...	l. br.	bl.	1	2
111	9.5	4	4	1,275	...	176	138	117	...	d. blo.	bl.	4	3
112	9.4	4	4	1,291	...	177	135	116	...	d. blo.	bl.	...	...
113	9.5	4	4	1,268	...	178	141	120	...	l. br.	g. br.	1	...
114	9.5	4	4	1,308	...	176	142	118	...	l. br.	l. br.	3	...
115	9.11	3	3	1,378	...	187	138	114	...	d. br.	bl.	...	2
116	9.2	3	3	1,276	...	166	141	116	...	l. br.	g. bl.	1	2
117	9.7	3	3	1,296	...	177	132	112	...	d. br.	d. br.	3	...

\* Twin.

## ADDITIONAL SERIES.

Number.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.	Number.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.
118	9.7	3	1,296	695	330	61	65	119	9.9	4	1,295	675	350	60	61

## REPEATED MEASUREMENTS.

Number in 8-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.	Number in 8-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.
2	9.9	5	1,282	672	350	63	58	16	9.3	2	1,290	685	345	61	56
3	9.10	5	1,300	712	325	61	57	18	9.1	2	1,160	640	315	54	51
4	9.6	4	1,247	678	316	64	55	19	9.2	3	1,186	660	315	60	56
6	9.5	4	1,305	702	333	62	61	21	9.0	2	1,299	698	330	58	60
7	9.6	3	1,281	685	350	64	56	23	9.11	4	1,235	690	345	61	51
8	9.8	3	1,243	660	350	62	57	24	9.9	4	1,318	695	345	68	59
9	9.9	3	1,262	685	320	61	59	25	9.6	4	1,292	695	350	69	60
10	9.5	3	1,238	648	330	60	49	28	9.4	3	1,299	695	360	69	57
12	9.9	2	1,282	680	355	63	58	29	9.0	3	1,236	690	345	61	60
13	9.9	3	1,295	690	350	62	62	30	9.4	3	1,304	710	335	63	56
14	9.1	3	1,354	720	375	66	63	31	9.7	3	1,254	641	447	64	56
15	9.9	2	1,246	670	335	58	52	32	9.6	3	1,245	700	335	58	49

## 9-year-old girls. Worcester, Mass.—Continued.

## REPEATED MEASUREMENTS—Continued.

Number in 8-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.	Number in 8-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.
33	9.3	3	1,212	640	320	53	48	58	9.7	4	1,255	665	340	54	60
35	9.8	4	1,275	670	330	55	51	59	9.3	4	1,140	610	320	53	56
40	9.5	4	1,243	650	340	56	48	60	9.2	4	1,272	680	330	53	49
42	9.3	4	1,328	700	490	67	57	61	9.11	4	1,289	685	325	50	60
43	9.7	4	1,316	690	330	53	53	62	9.7	4	1,265	705	345	61	60
45	9.3	4	1,182	630	320	53	53	64	9.5	4	1,235	640	325	50	51
46	9.3	4	1,182	630	320	53	53	65	9.1	4	1,236	670	340	50	56
47	9.11	4	1,334	700	360	66	77	66	9.8	4	1,228	655	325	50	48
49	9.1	3	1,254	650	340	53	53	67	9.1	3	1,285	690	325	51	56
50	9.8	3	1,312	710	355	55	68	68	9.8	3	1,290	700	350	52	58
54	9.0	3	1,303	690	345	53	69	69	9.4	3	1,208	670	325	53	52
55	9.3	3	1,252	670	330	53	71	71	9.1	3	1,303	695	350	53	61
56	9.6	3	1,303	685	340	53	72	72	9.2	3	1,166	610	315	54	44
57	9.0	2	1,318	695	355	71	84	85	9.6	3	1,400	750	433	69	77

Number in 7-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.	Number in 7-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.
18	9.0	2	1,233	667	336	52	55	62	9.0	3	1,214	645	330	61	53
61	9.0	2	1,275	715	330	52	55								

## ADDITIONAL MEASUREMENTS.

Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.	Forearm.	Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.	Forearm.
89	1,305	89	159	64	.....	104	1,230	95	153	.....	.....
90	1,268	94	154	.....	.....	105	1,270	100	147	.....	.....
91	.....	101	159	.....	.....	106	1,230	92	141	.....	.....
92	.....	105	154	.....	.....	107	1,311	102	156	.....	.....
93	.....	96	152	.....	.....	108	.....	99	159	64	.....
94	.....	96	143	.....	.....	109	.....	92	148	80	.....
95	.....	98	147	.....	.....	110	.....	98	147	63	.....
96	.....	96	144	.....	.....	111	.....	91	139	64	.....
97	.....	97	147	.....	.....	112	.....	94	150	63	.....
98	.....	101	154	.....	.....	113	.....	95	159	66	.....
99	.....	102	146	.....	.....	114	.....	96	149	65	335
100	.....	104	147	53	.....	115	.....	95	151	67	365
101	.....	91	152	57	.....	116	.....	101	153	65	340
102	.....	100	166	64	.....	117	.....	94	140	59	335
103	1,230	91	144	.....	.....	3 (8-yr. series)	.....	103	164	61	325

## 10-year-old girls. Worcester, Mass.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
1	10.2	6	5	1,450	778	181	146	118	79	blo.	gr.	4	1
2	10.5	6	.....	1,353	690	180	136	117	67	br.	bl.	.....	1
3	10.10	.....	.....	1,450	758	190	140	122	73	br.	d. br.	.....	1
4	10.8	6	4	1,380	710	181	145	120	60	l. br.	g. bl.	1	1
5	10.11	6	2	1,431	773	188	145	118	73	l. br.	g. bl.	.....	1
6	10.9	6	4	1,254	700	174	147	120	61	br.	gr.	2	3
7	10.3	.....	4	1,314	696	173	142	120	62	blo.	bl.	1	1
8	10.5	5	3	1,268	679	174	133	111	59	d. br.	gr.	.....	2
9	10.6	5	4	1,323	703	177	139	116	72	blo.	g. bl.	2	2
10	10.9	.....	5	1,398	737	169	141	120	73	d. br.	bl.	.....	1
11	10.6	.....	1	1,342	712	182	147	121	61	br.	g. bl.	1	1
12	10.8	.....	2	1,366	734	170	145	119	67	d. br.	bl.	.....	1
13	10.10	.....	2	1,342	706	182	146	123	68	l. br.	g. bl.	2	.....
14	10.11	.....	2	1,327	701	176	138	119	59	br.	bl.	1	.....
15	10.0	5	3	1,329	675	178	152	119	58	d. br.	br.	1	2

## 10-year-old girls. Worcester, Mass.—Continued.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
16	10.6		1	1,325	689	167	141	122	60	blo.	d. br.		
17	10.8	4	1	1,280	676	181	140	114	53	blo.	gr.	1	
18	10.8		4	1,339	717	175	147	117	66	d. br.	d. br.	2	1
19	10.7		3	1,246	679	191	146	118	62	d. br.	d. br.	1	2
20	10.4		2	1,223	650	173	139	113	56	d. br.	gr.	1	3
21	10.0	4	4	1,293	699	181	140	114	65	br.	bl.	3	2
22	10.7		3	1,468	790	187	147	122	122	br.	bl.	1	3
23	10.9	4	4	1,381	759	177	146	117	73	blo.	bl.	3	6
24	10.4	4	1	1,321	694	179	138	116	61	br.	gr.	1	1
25	10.0	4	1	1,370	712	192	148	128	71	blo.	bl.	1	1
26	10.3		1	1,263	682	175	140	115	59	br.	bl.	a1	
27	10.7		1	1,265	684	180	138	119	61	br.	d. br.	1	2
28	10.5	4	2	1,300	697	175	140	118	59	br.	bl.		1
29	10.9		1	1,365	732	180	142	118	64	d. br.	g. bl.	2	
30	10.11	6	3	1,365	735	170	144	123	67	br.	bl.		2
31	10.6	6	2	1,322	681	174	150	123	66	l. br.	bl.	1	
32	10.6	4	1	1,370	720	184	147	121	71	blo.	br.	1	
33	10.8	4	2	1,499	742	177	144	123	87	br.	gr.		
34	10.11	6	3	1,396	744	178	141	120	73	br.	l. br.	2	1
35	10.6	6	1	1,497	769	177	145	123	70	br.	gr.	1	1
36	10.9	6	1	1,349	711	182	141	121	61	d. blo.	l. br.	1	2
37	10.11		2	1,402	725	177	137	121	73	br.	gr.		1
38	10.2	5	1	1,269	687	179	141	118	50	br.	br.		
39	10.11	3	1	1,385	686	177	136	116	61	l. br.	gr.	1	2
40	10.2	4	1	1,280	711	173	144	116	56	blo.	bl.	3	1
41	10.3	5	1	1,333	704	169	142	116	55	br.	bl.	2	4
42	10.6	4	6	1,297	655	178	139	116	50	br.	br.	2	3
43	10.7	4	5	1,297	665	173	141	116	56	br.	bl.	4	2
44	10.6	4	2	1,391	739	189	146	132	82	d. blo.	gr.	3	1
45	10.3	4	3	1,322	759	181	145	126	67	br.	gr.	3	5
46	10.7	2	2	1,321	724	170	134	118	67	br.	gr.	2	2
47	10.0	6	2	1,285	693	172	149	122	62	br.	bl.	2	1
48	10.9	6	1	1,441	766	184	138	118	82	br.	bl.		
49	10.3	5	3	1,243	669	170	139	117	53	br.	l. br.	1	1
50	10.3		7	1,263	690	181	150	121	63	br.	bl.	4	2
51	10.5	5	1	1,385	756	186	142	120	69	br.	br.	2	
52	10.8	5	10	1,182	619	172	136	106	40	br.	gr.	7	5
53	10.8	4	2	1,403	731	182	147	127	74	d. br.	g. bl.	1	2
54	10.6	4	4	1,341	705	176	137	112	55	d. br.	bl.	2	4
55	10.5	4	6	1,261	680	180	145	118	60	d. blo.	g. bl.	4	1
56	10.9	4	6	1,343	752	179	147	121	81	d. br.	g. bl.	3	3
57	10.0	4	1	1,365	749	179	142	118	72	d. br.	bl.	1	
58	10.0	2	2	1,254	669	165	139	116	51	rd. br.	bl.	4	8
59	10.9	6	4	1,322	729	175	145	118	66	rd. br.	bl.	5	8
60	10.7	5	2	1,284	685	173	144	119	59	d. br.	bl.	2	1
61	10.0	4	4	1,225	663	170	152	120	53	d. br.	d. br.	2	8
62	10.1	4	1	1,310	683	180	144	124	66	br.	bl.	1	1
63	10.8	4	2	1,324	726	180	148	120	65	bla.	gr.		1
64	10.0	4	3	1,376	695	173	136	115	72	d. br.	gr.	2	1
65	10.10	3	4	1,304	709	173	133	112	57	br.	bl.	3	
66	10.2	3	9	1,365	704	174	137	112	59	d. br.	bl.	5	6
67	10.0	3	1	1,276	687	180	143	119	55	d. br.	d. br.		
68	10.1	3	7	1,219	668	177	145	117	54	d. br.	gr.	6	2
69	10.5	2	5	1,293	698	172	142	119	59	d. br.	d. br.	1	6
70	10.11	6	5	1,423	727	179	142	123	65	br.	bl.	4	3
71	10.11	5	1	1,371	682	167	147	120	64	l. blo.	bl.		
72	10.1	5	1	1,362	694	172	135	115	52	br.	gr.		
73	10.3	5	3	1,272	678	176	138	111	52	blo.	bl.		2
74	10.6	5	2	1,382	716	180	142	121	66	blo.	g. bl.		1
75	10.6	5	3	1,363	704	185	140	111	65	d. blo.	l. br.		4
76	10.5	5	4	1,273	668	179	141	116	55	br.	br.	1	3
77	10.7	5	1	1,356	692	179	147	123	66	d. br.	d. br.		
78	10.8	5	1	1,419	707	175	145	121	60	d. br.	d. br.	3	3
79	10.0	5	4	1,284	705	178	139	114	60	l. br.	g. bl.	3	2
80	10.0	4	1	1,343	718	173	137	120	65	l. br.	bl.		
81	10.0	4	4	1,410	743	175	139	120	67	br.	br.	1	4
82	10.7	4	3	1,307	680	171	136	114	56	rd. br.	bl.	2	1
83	10.5	4	2	1,352	718	180	147	123	63	br.	bl.	2	1
84	10.5	4	1	1,345	676	180	139	118	64	d. br.	g. bl.		2
85	10.6	4	2	1,361	715	186	141	118	67	br.	bl.	1	1
86	10.9	4	2	1,349	712	186	141	118	70	br.	bl.	3	
87	10.10	4	4	1,271	663	176	143	114	56	rd.	br.	1	7
88	10.3	4	2	1,370	746	189	149	126	75	l. br.	bl.	1	
89	10.6	4	2	1,307	700	176	146	115	65	br.	br.	2	2
90	10.9	3	1	1,352	675	187	146	121	58	d. br.	bl.	1	
91	10.0	3	2	1,182	640	170	136	109	44	blo.	gr.	2	1
92	10.3	3	1	1,378	708	171	141	120	72	br.	bl.	1	2
93	10.3	3	1	1,252	657	171	139	110	51	br.	gr.	3	1
94	10.3	3	8	1,270	682	180	136	115	57	br.	gr.	5	2

\*Half brother.

## 9-year-old girls. Worcester, Mass.—Continued.

## REPEATED MEASUREMENTS—Continued.

Number in 8-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.	Number in 8-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.
33	9.3	3	1,212	640	320	63	48	58	9.7	4	1,255	665	340	62	60
36	9.8	4	1,275	670	330	60	51	59	9.8	4	1,140	610	330	54	36
40	9.5	4	1,248	650	340	59	48	60	9.8	3	1,272	690	330	59	60
42	9.3	4	1,328	700	490	67	75	61	9.11	5	1,289	695	325	60	49
43	9.7	4	1,316	690	390	63	86	62	9.7	4	1,265	705	345	61	60
45	9.3	4	1,182	630	320	58	56	64	9.5	4	1,235	640	325	60	60
46	9.11	4	1,334	700	360	68	77	65	9.1	4	1,296	670	340	60	65
47	9.1	3	1,346	685	355	64	61	66	9.8	4	1,228	655	325	60	48
49	9.1	3	1,254	650	340	62	56	67	9.1	3	1,285	660	325	61	56
50	9.8	3	1,312	710	355	63	62	68	9.8	3	1,290	700	350	64	58
54	9.0	3	1,308	690	345	63	63	69	9.4	3	1,208	670	325	63	32
55	9.3	3	1,252	670	330	62	53	71	9.1	3	1,303	695	350	63	61
56	9.6	3	1,303	685	340	63	59	72	9.3	3	1,166	610	315	54	44
57	9.0	3	1,318	695	355	71	64	95	9.6	3	1,400	750	433	69	77
Number in 7-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.	Number in 7-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.
18	9.0	3	1,233	667	338	62	55	62	9.0	3	1,214	645	330	61	53
61	9.0	3	1,275	715	320	62	68								

## ADDITIONAL MEASUREMENTS.

Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.	Forearm.	Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.	Forearm.
89	1,305	89	.....	.....	.....	104	1,230	95	158	.....	.....
90	1,268	94	.....	.....	.....	105	1,270	100	147	.....	.....
91	.....	101	159	.....	.....	106	1,230	92	141	.....	.....
92	.....	105	154	.....	.....	107	1,811	102	156	.....	.....
93	.....	98	152	.....	.....	108	.....	99	159	64	.....
94	.....	95	143	.....	.....	109	.....	92	148	60	.....
95	.....	98	147	.....	.....	110	.....	98	147	63	.....
96	.....	98	144	.....	.....	111	.....	91	139	64	.....
97	.....	97	147	.....	.....	112	.....	94	150	63	.....
98	.....	101	154	.....	.....	113	.....	95	159	66	.....
99	.....	102	146	.....	.....	114	.....	98	149	65	335
100	.....	104	147	53	.....	115	.....	95	151	67	365
101	.....	91	152	57	.....	116	.....	101	158	65	340
102	.....	100	166	64	.....	117	.....	94	140	59	335
103	1,230	91	144	.....	.....	3 (8-yr. series)	.....	108	164	61	325

## 10-year-old girls. Worcester, Mass.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
1	10.2	6	5	1,450	778	181	146	118	79	blo.	gr.	4	1
2	10.5	6	1	1,353	690	180	136	117	67	br.	bl.	.....	1
3	10.10	.....	1	1,450	758	180	140	123	76	br.	d. br.	.....	.....
4	10.8	6	4	1,380	710	181	145	120	60	l. br.	g. bl.	1	1
5	10.11	6	3	1,431	778	188	145	118	76	l. br.	g. bl.	.....	.....
6	10.9	6	4	1,254	700	174	147	120	61	br.	gr.	2	1
7	10.3	.....	4	1,314	696	173	142	120	62	blo.	bl.	1	3
8	10.5	.....	3	1,268	679	174	133	111	50	d. br.	gr.	2	2
9	10.6	5	4	1,323	703	177	139	116	72	blo.	g. bl.	1	4
10	10.9	.....	5	1,398	737	169	141	120	78	d. br.	bl.	2	2
11	10.6	.....	1	1,342	712	182	147	121	61	br.	g. bl.	1	1
12	10.8	.....	3	1,368	734	170	145	119	77	d. br.	bl.	.....	1
13	10.10	.....	3	1,342	706	182	146	123	68	l. br.	g. bl.	2	.....
14	10.11	.....	3	1,327	701	176	138	119	59	br.	bl.	1	.....
15	10.0	5	3	1,229	675	178	152	119	58	d. br.	br.	1	2

## 10-year-old girls. Worcester, Mass.—Continued.

## REPEATED MEASUREMENTS.

Number in 9-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.	Number in 9-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.
1.....	10.8	6	1,335	705	355	66	70	41.....	10.3	---	1,174	635	305	58	45
2.....	10.9	6	1,401	746	380	71	66	42.....	10.4	---	1,311	715	340	65	66
4.....	10.1	5	1,301	678	350	62	60	44.....	10.2	5	1,484	800	390	75	98
5.....	10.3	5	1,352	712	377	70	65	47.....	10.5	5	1,292	695	330	67	62
6.....	10.11	5	1,468	770	410	71	86	49.....	10.11	5	1,432	755	380	65	65
7.....	10.0	5	1,397	738	385	65	67	51.....	10.4	4	1,393	730	370	68	69
9.....	10.4	5	1,415	732	370	65	73	53.....	10.4	4	1,320	700	335	64	58
11.....	10.6	5	1,358	714	355	66	59	54.....	10.8	5	1,367	725	370	70	71
12.....	10.1	5	1,368	738	372	68	81	55.....	10.7	5	1,287	680	350	61	65
13.....	10.9	4	1,365	708	365	66	68	56.....	10.10	5	1,322	685	345	63	71
16.....	10.8	4	1,353	712	350	63	65	57.....	10.11	5	1,386	730	380	65	66
21.....	10.1	4	1,442	773	412	73	109	58.....	10.8	3	1,277	680	335	66	55
22.....	9.11	3	1,329	650	330	60	46	59.....	10.4	4	1,344	700	355	67	64
23.....	10.1	3	1,287	670	350	64	54	63.....	10.9	5	1,298	700	335	63	57
24.....	10.2	3	1,320	700	370	66	63	72.....	10.6	4	1,310	715	340	68	63
25.....	10.7	3	1,319	695	360	65	61	73.....	10.7	5	1,282	660	350	65	51
26.....	10.0	3	1,345	740	385	72	73	74.....	10.8	5	1,362	760	345	68	74
31.....	10.3	5	1,323	695	350	61	59	75.....	10.9	5	1,302	685	350	65	55
32.....	10.9	4	1,319	685	340	63	69	76.....	10.10	5	1,326	700	355	62	63
33.....	10.4	3	1,312	710	350	63	67	77.....	10.1	4	1,456	750	390	67	96
34.....	10.4	3	1,350	730	345	63	63	80.....	10.7	4	1,253	705	325	66	56
35.....	10.6	5	1,386	720	370	67	69	82.....	10.2	4	1,363	725	355	64	75
36.....	10.9	5	1,345	735	365	67	79	83.....	10.6	4	1,324	690	330	67	58
37.....	10.5	5	1,348	710	350	66	60	85.....	10.4	4	1,175	645	320	59	50
38.....	10.10	5	1,305	675	355	64	55	87.....	10.6	3	1,293	700	335	60	54
39.....	10.2	4	1,382	710	385	62	75								

Number in 8-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.	Number in 8-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.
22.....	10.0	5	1,434	740	395	70	95	36.....	10.0	---	1,265	685	330	61	51

## ADDITIONAL MEASUREMENTS.

Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.	Forearm.	Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.	Forearm.
114.....	1,381	99				141.....		95	149	66	
121.....		101	144			142.....		104	158	62	
122.....		96	142			143.....		91	150	65	
123.....		106	152			144.....		96	143	72	
124.....		87	148			145.....		96	146	65	
125.....		103	161			146.....		95	158	63	
126.....		96	155			147.....		91	152	61	
127.....		104	149			148.....		99	161	65	
128.....		104	156			149.....		100	158	68	
129.....		100	148			150.....		94	145	62	
130.....		99	165			151.....		97	151	65	335
131.....		101	151			152.....		99	159	72	390
132.....		95	151			153.....		100	156	67	380
133.....		88	134	61		154.....		91	148	65	365
134.....	1,361	102	150			155.....		96	148	64	330
135.....	1,450	101	146			156.....		96	154	66	345
136.....	1,311	105	150			157.....		100	161	70	415
137.....		91	148	63		158.....		106	166	61	370
138.....		102	154	63		159.....		97	153	64	340
139.....		94	147	64		12 (9-year se- ries).....		102	164		
140.....		101	151	64							

## STATISTICS OF GROWTH.

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## 11-year-old girls. Worcester, Mass.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
1	11.11	6	1	1,416	712	178	144	117	71	l. br.	bl.		
2	11.9	6	4	1,846	690	177	147	118	72	blo.	bl.	8	1
3	11.11	6	1	1,881	710	174	145	123	66	blo.	gr.		1
4	11.4	6	4	1,448	734	178	140	123	70	br.	g. bl.	1	4
5	11.4	7 and 6	1	1,444	709	182	140	120	83	l. br.	bl.	2	
6	11.6		1	1,390	721	187	145	119	76	br.	g. bl.		1
7	11.6		2	1,449	760	185	143	123	78	blo.	g. bl.	1	2
8	11.1		1	1,326	694	179	142	111	57	br.	bl.	1	
9	11.10	7	4	1,400	760	173	142	121	81	l. br.	g. bl.	2	1
10	11.6		2	1,673	728	181	145	129	70	br.	bl.	1	
11	11.11	6	3	1,396	730	180	141	118	67	l. br.	g. bl.		2
12	11.6	6	3	1,410	737	178	140	119	71	l. br.	g. bl.	1	2
13	11.6	6	6	1,400	745	184	142	120	68	br.	br.		
14	11.7	6	2	1,302	662	175	154	125	65	l. br.	br.	1	2
15	11.11	6	1	1,303	697	181	135	114	62	l. br.	gr.		2
16	11.11	6	5	1,390	709	172	145	124	62	blo.	bl.	3	
17	11.9	5	1	1,320	683	180	141	117	64	blo.	gr.	2	1
18	11.1		2	1,353	697	168	147	126	59	l. br.	g. bl.	2	
19	11.1	5	1	1,304	667	170	140	118	65	bla.	br.	1	
20	11.1		3	1,396	736	181	150	128	80	l. br.	bl.	1	1
21	11.3	5	3	1,405	716	183	141	123	79	l. br.	bl.	5	
22	11.2		4	1,372	745	181	145	121	76	d. br.	d. br.	8	4
23	11.0		2	1,318	697	179	139	114	64	l. br.	g. bl.		
24	11.2		2	1,417	734	178	152	124	75	br.	bl.		1
25	11.6	5	2	1,280	679	176	140	114	50	blo.	bl.	2	1
26	11.5		2	1,258	687	176	148	121	59	blo.	bl.		3
27	11.5		2	1,342	723	171	138	119	66	l. br.	br.	1	
28	11.4		2	1,363	721	184	139	113	66	l. br.	gr.	2	
29	11.6		2	1,289	682	174	136	114	55	l. br.	bl.		1
30	11.6		4	1,329	704	176	140	116	68	br.	bl.	3	
31	11.10	4	2	1,363	724	188	141	115	72	br.	bl.	1	3
32	11.4	3	2	1,305	693	173	132	114	58	r. br.	d. br.	1	
33	11.6	3	2	1,358	720	181	146	126	65	d. br.	bl.	1	2
34	11.0	4	1	1,374	717	174	138	119	75	blo.	bl.	1	3
35	11.7	4	1	1,747	808	193	151	126	101	br.	gr.	1	
36	11.3	4	4	1,294	689	195	133	117	68	br.	br.		
37	11.3	4	2	1,313	714	172	140	117	69	br.	bl.	4	1
38	11.5	6	1	1,365	722	178	140	120	64	br.	g. br.	2	2
39	11.2	6	1	1,398	729	181	140	119	81	br.	br.		
40	11.4	6	3	1,342	702	179	143	113	68	blo.	g. bl.	1	
41	11.0	4	4	1,412	760	186	142	121	75	d. blo.	g. bl.	2	4
42	11.9	5	4	1,325	742	173	146	117	63	blo.	gr.	2	5
43	11.7	5	4	1,294	665	180	143	116	59	br.	g. bl.	2	2
44	11.3	5	1	1,382	727	168	132	117	65	d. blo.	gr.	3	1
45	11.6	5	1	1,331	682	177	145	115	61	br.	br.	1	2
46	11.7	5	4	1,433	729	192	153	125	74	red.	gr.	3	
47	11.5	7	1	1,436	720	178	150	122	68	d. blo.	g. bl.		1
48	11.1	5	3	1,419	762	187	144	126	78	d. br.	br.	1	2
49	11.2	5	2	1,353	702	181	136	115	65	br.	bl.		1
50	11.2	5	1	1,396	742	170	143	118	66	br.	br.		
51	11.6	5	1	1,324	723	189	143	124	65	blo.	bl.	1	
52	11.11	5	5	1,366	724	171	135	121	78	br.	bl.	3	4
53	11.4	4	2	1,473	767	179	149	128	93	br.	bl.	1	1
54	11.1	4	5	1,287	686	168	135	111	57	d. br.	br.	5	3
55	11.11	3	3	1,456	784	179	141	124	86	d. br.	br.	3	6
56	11.6	6	3	1,478	801	177	142	121	89	br.	d. br.	2	
57	11.1	6	3	1,321	694	165	140	118	69	d. br.	gr.	3	
58	11.10	1	1	1,397	735	174	142	122	70	d. br.	d. br.	1	3
59	11.5	5	2	1,355	729	181	142	120	66	d. blo.	bl.	2	
60	11.2	5	5	1,314	711	174	144	115	57	d. br.	bl.	2	1
61	11.4	5	5	1,273	698	173	140	115	56	d. blo.	bl.	4	
62	11.11	5	2	1,432	776	184	150	125	100	l. br.	bl.		2
63	11.4	4	1	1,410	772	176	136	118	72	br.	bl.		
64	11.10	4	2	1,258	664	177	141	115	51	l. br.	br.	3	
65	11.10	4	2	1,440	761	181	141	122	81	d. blo.	gr.		1
66	11.3	4	10	1,431	774	174	140	125	73	br.	gr.	5	4
67	11.3	4	2	1,431	793	170	134	119	81	d. br.	bl.	1	
68	11.0	4	2	1,390	692	176	148	116	57	br.	l. br.	1	3
69	11.4	4	3	1,292	681	173	140	111	53	l. br.	bl.	1	2
70	11.7	4	2	1,362	710	176	140	120	72	br.	bl.	2	1
71	11.3	6	1	1,442	769	183	144	121	72	br.	bl.		2
72	11.9	6	2	1,390	699	179	137	118	59	br.	br.	2	
73	11.7	6	2	1,418	728	176	130	115	72	d. br.	d. br.		1
74	11.10	6	4	1,393	708	178	147	122	63	br.	bl.	3	
75	11.0	6	3	1,380	750	177	145	122	70	d. br.	bl.	2	2
76	11.11	6	1	1,602	843	181	144	127	128	d. br.	bl.		1
77	11.3	5	9	1,400	735	184	145	119	65	d. br.	bl.	5	4
78	11.9	7	8	1,370	714	189	145	122	65	d. br.	gr.	4	3

## 11-year-old girls. Worcester, Mass.—Continued.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
79.....	11.10	5	3	1,327	705	176	141	120	60	br.	bl.	.....	2
80.....	11.8	4	4	1,423	719	174	134	113	67	bla.	bl.	2	1
81.....	11.10	5	1	1,507	793	183	150	129	97	red.	bl.	.....	1
82.....	11.6	4	4	1,374	757	180	144	118	64	br.	gr.	4	4
83.....	11.1	4	2	1,362	695	175	138	118	67	blo.	gr.	.....	.....
84.....	11.8	4	1	1,364	681	174	140	113	57	br.	bl.	1	1
85.....	11.0	3	5	1,312	716	177	137	119	61	br.	bl.	.....	5
86.....	11.3	3	3	1,316	698	175	147	117	58	br.	br.	3	2
87.....	11.1	3	12	1,330	731	173	141	118	74	d. br.	bl.	6	5
88.....	11.1	2	3	1,330	721	169	144	120	62	br.	bl.	4	3
89.....	11.7	3	3	1,475	739	180	136	124	73	l. br.	l. br.	2	1
90.....	11.11	7	3	1,311	718	177	149	117	61	br.	gr.	2	1
91.....	11.9	6	3	1,361	704	183	144	121	68	l. blo.	gr.	.....	2
92.....	11.4	5	1	1,380	742	186	145	119	63	l. br.	gr.	.....	.....
93.....	11.2	5	1	1,492	778	189	145	124	100	blo.	gr.	.....	1
94.....	11.3	4	4	1,373	715	177	146	125	61	br.	g. bl.	1	2
95.....	11.9	6	6	1,396	725	184	150	128	75	gr.	gr.	1	.....
96.....	11.8	6	1	1,420	717	180	148	124	78	br.	g. bl.	.....	1
97.....	11.2	6	1	1,392	728	179	146	123	60	red.	bl.	.....	1
98.....	11.3	5	5	1,369	712	170	138	117	64	blo.	bl.	2	1
99.....	11.5	5	3	1,384	731	180	149	121	67	d. blo.	bl.	1	1
100.....	11.9	5	13	1,330	707	180	153	125	67	br.	br.	5	8
101.....	11.10	5	3	1,322	694	179	135	117	57	l. br.	g. bl.	1	1
102.....	11.8	5	4	1,362	741	175	144	112	60	gold.	g. bl.	3	3
103.....	11.8	5	3	1,412	746	183	132	120	73	bl.	bl.	3	4
104.....	11.1	5	5	1,440	756	176	141	119	77	d. br.	d. br.	.....	2
105.....	11.0	2	2	1,339	751	180	144	123	82	br.	gr.	.....	1
106.....	11.0	5	1	1,332	733	176	140	117	68	d. br.	g. bl.	1	1
107.....	11.0	4	1	1,434	746	178	141	122	81	l. br.	gr.	.....	2
108.....	11.0	4	3	1,350	708	179	147	120	70	d. br.	br.	1	1
109.....	11.0	4	1	1,302	732	183	135	114	66	br.	br.	3	2
110.....	11.0	4	3	1,361	684	181	136	118	61	br.	bl.	.....	2
111.....	11.0	4	1	1,325	685	176	142	122	61	d. br.	bl.	2	2
112.....	11.0	4	1	1,328	688	175	142	119	79	br.	bl.	1	2
113.....	11.6	4	6	1,388	731	187	141	123	68	br.	bl.	2	4
114.....	11.11	3	1	1,302	694	178	143	117	64	br.	bl.	3	.....
115.....	11.0	6	6	1,370	745	176	135	119	81	d. br.	d. br.	.....	5
116.....	11.0	3	1	1,332	714	169	145	124	68	blo.	bl.	1	.....
117.....	11.3	3	3	1,340	712	173	135	111	56	br.	gr.	4	2
118.....	11.11	3	3	1,337	692	182	141	119	60	br.	bl.	.....	2
119.....	11.8	1	6	1,446	.....	181	139	124	.....	d. blo.	bl.	2	1
120.....	11.8	5	2	1,408	.....	172	150	127	.....	blo.	bl.	1	2
121.....	11.0	3	3	1,336	.....	170	144	116	.....	d. br.	l. br.	2	3
122.....	11.2	5	2	1,345	.....	174	139	121	.....	blo.	bl.	2	2
123.....	11.0	5	1	1,376	.....	182	135	121	.....	d. br.	gr.	.....	.....
124.....	11.8	2	2	1,322	.....	177	139	120	.....	d. br.	d. br.	1	2
125.....	11.6	5	1	1,394	.....	183	144	118	.....	blo.	bl.	1	.....
126.....	11.1	4	2	1,353	.....	179	142	119	.....	l. br.	bl.	1	2
127.....	11.2	3	3	1,258	.....	176	135	110	.....	d. br.	bl.	.....	1
128.....	11.2	3	4	1,306	.....	177	136	110	.....	d. br.	gr.	2	1
129.....	11.3	6	2	1,290	.....	172	146	118	.....	d. br.	d. br.	2	3
130.....	11.4	4	4	1,319	.....	183	153	120	.....	d. br.	bl.	.....	4
131.....	11.0	3	3	1,355	.....	177	143	122	.....	d. br.	g. bl.	1	1
132.....	11.6	4	4	1,294	680	177	152	136	.....	d. br.	gr.	2	1
133.....	11.3	4	1	1,270	673	176	141	117	.....	blo.	bl.	2	.....
134.....	11.9	4	1	1,344	702	173	137	116	.....	l. blo.	g. bl.	4	1
135.....	11.9	4	2	1,370	.....	182	135	110	.....	d. br.	l. br.	.....	2
136.....	11.1	5	2	1,396	.....	170	145	123	.....	l. blo.	bl.	1	2
137.....	11.10	5	1	1,349	.....	178	140	117	.....	d. br.	d. br.	1	.....
138.....	11.8	6	6	1,472	.....	183	143	120	.....	d. br.	gr.	4	2
139.....	11.7	6	5	1,346	.....	175	142	122	.....	l. br.	l. br.	1	6
140.....	11.5	6	3	1,345	.....	187	142	117	.....	d. blo.	bl.	2	1
141.....	11.1	6	2	1,427	.....	184	161	124	.....	d. br.	bl.	1	1
142.....	11.6	6	3	1,322	.....	179	144	120	.....	d. br.	l. br.	4	1
143.....	11.5	6	3	1,543	.....	184	150	131	.....	l. br.	l. br.	1	3
144.....	11.0	6	2	1,402	.....	183	147	127	.....	l. br.	bl.	1	1
145.....	11.1	5	4	1,310	.....	175	135	120	.....	d. blo.	d. br.	6	3
146.....	11.3	5	3	1,425	.....	170	134	120	.....	d. br.	bl.	1	1
147.....	11.11	5	2	1,405	.....	165	145	120	.....	d. br.	d. br.	3	2
148.....	11.8	4	2	1,439	.....	174	143	121	.....	d. br.	l. br.	1	.....
149.....	11.6	4	2	1,327	.....	177	134	113	.....	d. br.	d. br.	1	1
150.....	11.1	4	2	1,339	.....	171	140	115	.....	d. br.	bl.	1	.....

## 11-year-old girls. Worcester, Mass.—Continued.

## ADDITIONAL SERIES.

Number.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.	Number.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.
151.....	11.0	3	1,355	725	365	68	68	154.....	11.7	5	1,347	715	350	68	70
152.....	11.11	3	1,427	754	384	69	71	155.....	11.0	4	1,417	760	385	77	79
153.....	11.5	2	1,329	705	360	66	67								

## REPEATED MEASUREMENTS.

Number in 10-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.	Number in 10-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.
4.....	11.3	3	1,401	723	382	67	67	54.....	11.1	5	1,397	735	370	68	61
6.....	11.3	3	1,321	745	365	70	72	55.....	11.5	5	1,323	704	367	68	66
7.....	11.3	3	1,391	730	370	70	70	56.....	11.9	5	1,452	806	385	73	80
9.....	11.5	3	1,390	728	362	69	69	58.....	11.1	3	1,307	685	340	61	61
10.....	11.6	3	1,491	782	417	71	92	59.....	11.9	7	1,332	760	370	73	72
11.....	11.6	3	1,443	766	390	68	71	60.....	11.7	6	1,353	730	345	63	70
13.....	11.9	3	1,451	758	387	67	80	62.....	11.1	5	1,346	680	(?)	69	69
15.....	11.0	3	1,280	677	350	68	63	63.....	11.8	5	1,414	785	375	70	78
17.....	11.3	3	1,351	702	355	64	58	64.....	11.5	4	1,447	720	415	68	83
18.....	11.3	3	1,405	736	379	72	73	65.....	11.10	4	1,393	730	370	68	83
19.....	11.7	5	1,301	692	335	64	67	66.....	11.3	4	1,352	725	355	65	65
20.....	11.4	4	1,274	690	355	65	63	67.....	11.1	4	1,342	700	365	66	60
21.....	11.11	5	1,343	742	390	67	70	68.....	11.1	4	1,367	700	350	62	60
22.....	11.6	5	1,516	812	420	77	133	70.....	11.10	7	1,508	780	385	68	73
23.....	11.9	5	1,442	760	380	67	84	77.....	11.8	6	1,425	715	380	67	69
24.....	11.4	5	1,321	738	390	70	70	78.....	11.8	6	1,452	740	385	66	74
25.....	11.1	5	1,442	750	380	68	78	79.....	11.11	6	1,337	736	345	65	65
26.....	11.3	5	1,320	698	350	65	66	80.....	11.0	4	1,401	755	365	60	74
27.....	11.8	5	1,346	705	355	63	68	81.....	11.6	4	1,492	800	400	74	79
28.....	11.4	5	1,352	728	360	64	66	82.....	11.8	4	1,370	700	370	68	63
29.....	11.9	5	1,453	790	390	66	76	83.....	11.5	5	1,405	740	370	69	73
33.....	11.6	4	1,520	775	400	72	98	84.....	11.3	5	1,397	700	385	62	65
34.....	11.11	7	1,474	799	395	75	83	87.....	11.0	4	1,312	700	350	64	61
36.....	11.10	7	1,414	745	375	68	68	88.....	11.3	5	1,435	780	395	72	85
38.....	11.2	6	1,341	705	450	61	57	89.....	11.7	5	1,381	730	355	70	69
41.....	11.2	6	1,343	710	350	67	60	90.....	11.10	4	1,443	725	395	71	73
42.....	11.5	5	1,267	665	350	63	56	92.....	11.4	3	1,420	730	405	69	61
43.....	11.7	5	1,276	690	335	61	68	93.....	11.4	4	1,332	680	340	61	54
45.....	11.3	5	1,351	760	345	68	74	94.....	11.3	4	1,356	725	370	66	72
46.....	11.3	5	1,385	750	365	69	88	95.....	11.2	4	1,404	750	380	71	71
47.....	11.1	7	1,325	715	340	67	71	96.....	11.2	3	1,345	670	360	63	64
48.....	11.10	7	1,534	810	405	79	96	97.....	11.4	3	1,339	715	355	65	65
49.....	11.3	6	1,298	695	345	65	61	107.....	11.4	4	1,366	695	380	66	63
50.....	11.3	6	1,344	700	340	66	68	108.....	11.1	4	1,464	770	380	69	80
51.....	11.5	5	1,444	790	385	70	79	109.....	11.9	5	1,362	720	375	66	67
52.....	11.9	5	1,221	635	315	57	43	112.....	11.1	4	1,384	700	380	67	81
53.....	11.3	5	1,475	765	405	68	82								

Number in 9-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.	Number in 9-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.
8.....	11.0	5	1,296	695	350	64	56	71.....	11.0	5	1,322	710	340	65	54
46.....	11.4	2	1,451	750	395	71	73	72.....	11.0	5	1,333	700	335	60	53
62.....	11.7	2	1,331	690	335	63	54								



## 11-year-old girls. Worcester, Mass.—Continued.

## ADDITIONAL MEASUREMENTS.

Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.	Forearm.	Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.	Forearm.
124		103	157			139		94	155	67	
125		95	148			140		97	159	68	
126		99	156			141		102	165	69	
127		97	155			142		102	176	72	
128		99	147	65		143		101	168	75	
129		98	148	63		144		97	164	68	
130		98	160	62		145		99	156	64	350
131		95	147	67		146		106	166	71	390
132	1,310	97	153			147		109	152	72	370
133	1,281	100	147			148		103	158	70	375
134	1,366	94	154			149		95	156	61	340
135		94	153	66		150		107	161	62	370
136		100	167	74		15 (10-yr. series)		104	165		
137		99	155	64		26 (10-yr. series)		98	158		
138		103	158	68							

## 12-year-old girls. Worcester, Mass.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
1	12.8	6	3	1,402	732	186	144	116	80	blo.	bl.	3	1
2	12.7	6	2	1,426	721	181	145	120	79	blo.	bl.	1	1
3	12.4	6	2	1,574	801	182	143	123	100	blo.	bl.	1	1
4	12.5	6	2	1,345	698	182	143	117	72	br.	br.	1	2
5	12.11	8	1	1,549	795	187	150	184	97	d. br.	l. bl.		
6	12.8	8	2	1,578	785	180	147	122	86	br.	g. bl.	2	2
7	12.3		3	1,374	729	174	140	121	68	d. br.	br.		
8	12.8		1	1,481	744	183	145	125	78	bla.	d. br.	1	1
9	12.6	8	1	1,491	775	181	135	123	75	br.	gr.	2	
10	12.8		1	1,510	752	184	139	119	83	blo.	bl.	1	2
11	12.10		2	1,410	749	177	136	113	62	br.	br.	1	2
12	12.7		1	1,420	737	185	140	117	79	blo.	bl.	1	
13	12.10		2	1,395	707	177	137	118	72	br.	bl.	1	
14	12.2		3	1,668	874	181	143	126	94	br.	bl.	4	
15	12.8		2	1,471	744	182	141	118	74	br.	bl.	2	1
16	12.0		2	1,360	700	174	140	114	65	br.	br.	1	
17	12.9	7 and 6	2	1,505	774	180	144	125	88	br.	bl.	4	3
18	12.4		1	1,347	713	173	142	121	65	br.	gr.		
19	12.4	3	3	1,407	741	172	152	130	70	br.	bl.	3	1
20	12.4		1	1,463	762	176	138	124	73	blo.	bl.	1	
21	12.0	7	2	1,580	860	184	153	135	125	blo.	bl.	1	
22	12.9	6	4	1,398	761	183	140	122	73	l. br.	gr.	2	1
23	12.9	6	1	1,381	749	183	142	121	73	br.	gr.	2	2
24	12.8	6	3	1,406	763	176	148	121	68	l. br.	bl.	2	1
25	12.8	6	4	1,381	736	189	150	123	73	br.	g. bl.	1	3
26	12.4	6	1	1,420	747	185	145	124	78	d. br.	d. br.	2	1
27	12.1	6	2	1,465	748	183	140	119	77	br.	bl.	2	1
28	12.3	6	5	1,357	717	175	143	118	66	blo.	gr. br.	1	6
29	12.2		4	1,475	793	180	147	131	96	d. br.	g. bl.	1	3
30	12.1		1	1,438	746	177	153	124	74	blo.	bl.	1	
31	12.2		7	1,374	752	175	139	117	72	blo.	bl.	4	4
32	12.1	5	3	1,423	738	179	145	125	71	blo.	l. br.	1	1
33	12.2	7	4	1,507	766	177	142	119	84	br.	g. bl.	2	1
34	12.11		3	1,453	780	184	142	120	86	d. br.	g. bl.	1	1
35	12.4	5	2	1,398	779	180	144	126	80	br.	br.	1	
36	12.0	3	3	1,406	742	177	151	124	94	blo.	g. bl.	1	1
37	12.5		2	1,337	726	175	149	122	73	blo.	g. bl.	3	3
38	12.5	9	1	1,549	804	188	149	133	106	blo.	bl.		
39	12.6	8	7	1,413	761	189	150	124	73	br.	bl.	6	2
40	12.3	6	1	1,490	790	177	144	123	68	br.	bl.		
41	12.6	6	8	1,460	777	171	148	121	80	l. br.	br.	3	5
42	12.8	4	2	1,481	791	184	141	125	93	br.	br.	1	
43	12.10	6	4	1,372	685	178	147	124	59	blo.	bl.	1	3
44	12.11	6	5	1,553	810	188	143	121	98	br.	g. bl.	5	8
45	12.5	6	3	1,387	734	178	141	116	67	br.	g. bl.	2	
46	12.0	6	1	1,435	777	180	138	124	91	br.	br.		
47	12.2	5	3	1,532	916	175	146	127	113	br.	bl.	2	1
48	12.1	5	1	1,552	847	182	142	118	93	br.	gr.	1	
49	12.7	5	3	1,446	795	185	135	122	81	br.	br.	1	5

## 12-year-old girls. Worcester, Mass.—Continued.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
50.	12.11	5	1	1,501	811	182	141	127	111	d. br.	br.	1	1
51.	12.11	5	1	1,433	725	184	138	118	118	br.	br.	1	2
52.	12.1	5	4	1,349	722	179	143	123	72	br.	l. br.	2	4
53.	12.10	7	2	1,522	796	185	147	123	96	blo.	g. bl.	1	1
54.	12.5	5	2	1,602	818	176	147	130	103	br.	gr.	3	2
55.	12.5	5	1	1,552	825	191	147	139	109	br.	br.	3	4
56.	12.5	4	13	1,322	711	174	138	117	61	d. br.	br.	3	9
57.	12.8	3	3	1,900	723	179	139	117	63	d. br.	br.	1	1
58.	12.1	7	8	1,309	708	178	139	118	63	br.	bl.	1	1
59.	12.0	7	8	1,454	765	176	141	114	78	br.	bl.	4	1
60.	12.0	7	3	1,450	752	184	146	123	72	br.	g. bl.	2	1
61.	12.7	7	3	1,477	741	186	147	126	83	d. br.	br.	2	2
62.	12.4	6	2	1,492	750	175	141	117	67	br.	bl.	2	2
63.	12.3	6	4	1,445	787	172	142	122	69	br.	gr.	4	2
64.	12.1	6	4	1,402	719	169	135	117	65	l. br.	gr.	1	2
65.	12.11	6	3	1,331	814	168	140	124	95	d. br.	br.	1	1
66.	12.3	6	1	1,441	702	174	141	119	63	d. blo.	bl.	1	2
67.	12.10	6	1	1,496	733	176	142	124	84	l. br.	bl.	1	2
68.	12.3	5	3	1,453	765	176	142	127	74	d. br.	d. br.	1	3
69.	12.0	5	4	1,421	768	175	141	124	83	d. br.	gr.	2	3
70.	12.6	5	5	1,465	780	186	144	122	75	rd.	g. bl.	1	3
71.	12.2	4	1	1,464	791	184	148	125	85	d. blo.	bl.	1	1
72.	12.1	4	4	1,429	750	171	146	128	72	br.	gr.	1	2
73.	12.0	4	1	1,408	757	171	145	124	77	d. br.	d. br.	1	2
74.	12.7	8	8	1,485	770	176	152	125	73	br.	bl.	5	2
75.	12.3	7	8	1,494	737	184	141	122	71	br.	gr.	2	2
76.	12.8	7	8	1,422	681	176	137	114	57	l. blo.	bl.	3	3
77.	12.0	7	3	1,477	783	179	147	127	78	d. blo.	bl.	5	3
78.	12.9	6	1	1,491	762	178	142	118	71	br.	br.	1	1
79.	12.9	6	2	1,480	754	183	150	129	90	br.	g. bl.	1	1
80.	12.0	5	1	1,427	705	170	141	117	55	d. br.	bl.	3	1
81.	12.2	5	2	1,400	751	177	141	126	68	br.	bl.	1	1
82.	12.5	5	2	1,421	745	183	137	121	81	br.	br.	1	2
83.	12.5	5	2	1,365	704	178	135	116	57	d. br.	br.	1	1
84.	12.11	4	5	1,442	746	185	144	122	86	br.	bl.	5	5
85.	12.11	4	3	1,491	830	179	151	130	114	d. br.	bl.	4	4
86.	12.1	3	9	1,391	731	181	152	127	68	d. br.	bl.	5	4
87.	12.11	7	1	1,455	770	180	141	120	73	br.	bl.	1	1
88.	12.0	6	5	1,419	776	187	145	117	73	br.	br.	2	2
89.	12.0	6	1	1,431	751	181	136	121	72	l. br.	bl.	2	2
90.	12.2	6	1	1,484	764	178	141	117	82	blo.	bl.	1	1
91.	12.10	9	1	1,509	763	175	135	113	73	br.	gr.	1	1
92.	12.8	9	4	1,525	795	179	147	128	87	br.	g. bl.	4	3
93.	12.9	8	2	1,425	750	182	146	125	86	br.	gr.	1	1
94.	12.1	8	1	1,581	804	188	141	128	98	br.	bl.	1	1
95.	12.9	7	1	1,404	735	182	150	124	77	br.	bl.	1	2
96.	12.7	7	3	1,507	768	191	141	122	87	br.	gr.	2	2
97.	12.4	3	3	1,368	710	165	145	126	69	d. blo.	g. bl.	2	2
98.	12.0	6	1	1,355	681	180	140	112	64	blo.	gr.	2	5
99.	12.7	5	3	1,434	752	181	139	119	72	l. br.	gr.	1	2
100.	12.11	4	1	1,408	783	184	145	119	83	l. br.	br.	1	2
101.	12.8	6	1	1,544	796	176	140	126	98	d. br.	d. br.	1	1
102.	12.10	8	8	1,550	790	180	141	125	83	br.	br.	3	3
103.	12.11	6	3	1,442	796	173	142	125	78	br.	g. bl.	2	1
104.	12.8	6	4	1,341	724	180	138	116	60	br.	bl.	2	5
105.	12.4	6	1	1,390	713	175	135	123	67	d. br.	d. br.	2	1
106.	12.5	6	4	1,528	790	187	147	124	85	br.	gr.	3	2
107.	12.0	6	3	1,463	784	177	140	127	81	d. br.	gr.	1	1
108.	12.10	5	2	1,398	730	178	136	115	72	br.	bl.	2	1
109.	12.7	5	2	1,582	824	186	142	125	98	br.	bl.	3	1
110.	12.0	5	2	1,469	728	193	140	121	76	bla.	d. br.	4	1
111.	12.0	5	2	1,442	762	180	141	125	77	br.	gr.	1	1
112.	12.0	5	3	1,465	747	181	139	121	83	br.	bl.	1	1
113.	12.9	4	2	1,400	740	174	135	119	76	br.	g. bl.	1	1
114.	12.0	4	6	1,514	765	171	137	120	82	br.	d. br.	6	2
115.	12.1	9	3	1,422	.....	182	145	124	.....	l. br.	bl.	2	2
116.	12.11	9	4	1,526	.....	181	144	126	.....	bla.	l. br.	3	2
117.	12.7	9	6	1,640	.....	197	152	130	.....	d. br.	gr.	1	5
118.	12.8	8	4	1,476	.....	176	148	127	.....	d. blo.	gr.	5	3
119.	12.9	8	1	1,512	.....	177	145	126	.....	bla.	l. br.	2	2
120.	12.4	8	1	1,512	.....	181	143	124	.....	d. br.	g. bl.	2	2
121.	12.9	8	3	1,416	.....	184	145	126	.....	d. blo.	bl.	3	2
122.	12.5	8	5	1,527	.....	192	150	129	.....	d. br.	l. br.	2	2
123.	12.6	8	2	1,438	.....	177	141	116	.....	blo.	g. bl.	3	2
124.	12.5	7	4	1,502	.....	188	145	121	.....	d. blo.	g. bl.	3	2
125.	12.5	7	3	1,604	.....	184	152	129	.....	d. br.	g. bl.	1	2
126.	12.0	7	7	1,483	.....	182	153	120	.....	d. br.	g. bl.	1	5
127.	12.6	6	3	1,528	.....	180	144	125	.....	d. blo.	g. bl.	1	1
128.	12.11	6	4	1,512	.....	176	136	127	.....	d. blo.	gr.	8	1

## 12-year-old girls. Worcester, Mass.—Continued.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
129.....	12.1	6	2	1,313	.....	163	144	126	.....	d. blo.	gr.	1	.....
130.....	12.1	6	3	1,278	.....	183	139	114	.....	d. blo.	gr.	4	.....
131.....	12.1	5	3	1,418	.....	181	143	120	.....	rd. br.	d. br.	1	2
132.....	12.3	5	4	1,353	.....	181	138	119	.....	bl.	bl.	3	3
133.....	12.4	5	3	1,404	.....	183	153	127	.....	d. br.	d. br.	1	3
134.....	12.0	4	3	1,418	.....	186	140	121	.....	d. br.	bl.	1	1
135.....	12.6	8	2	1,475	.....	178	147	120	.....	d. br.	gr.	2	3
136.....	12.6	4	2	1,367	.....	177	146	121	.....	d. br.	gr.	1	1
137.....	12.4	5	1	1,469	.....	173	145	123	.....	d. blo.	bl.	2	.....
138.....	12.0	5	2	1,345	.....	176	137	115	.....	d. br.	gr.	.....	1
139.....	12.10	5	2	1,368	.....	177	137	118	.....	l. br.	l. br.	.....	2
140.....	12.5	5	1	1,503	.....	186	148	125	.....	d. blo.	bl.	3	2
141.....	12.11	5	1	1,516	.....	181	150	128	.....	d. blo.	gr.	.....	.....
142.....	12.2	4	1	1,455	.....	183	149	128	.....	l. br.	gr.	2	4
143.....	12.3	6	7	1,424	.....	181	141	120	.....	rd. br.	bl.	3	3
144.....	12.5	6	.....	1,491	.....	182	147	129	.....	d. br.	bl.	4	3
145.....	12.9	6	1	1,432	.....	180	145	125	.....	blo.	gr.	3	2
146.....	12.6	6	7	1,388	.....	177	147	124	.....	d. br.	bl.	5	3
147.....	12.1	6	1	1,571	.....	189	144	125	.....	blo.	gr.	4	.....
148.....	12.8	6	1	1,492	.....	185	144	123	.....	l. br.	bl.	1	3
149.....	12.9	6	1	1,400	.....	180	145	117	.....	d. blo.	bl.	3	.....
150.....	12.11	7	8	1,575	.....	178	149	115	.....	l. br.	gr.	5	1
151.....	12.11	7	3	1,453	.....	176	147	124	.....	l. br.	gr.	5	.....
152.....	12.11	7	7	1,382	.....	173	129	110	.....	d. blo.	gr.	3	1
153.....	12.8	7	8	1,436	.....	178	143	122	.....	d. br.	l. br.	3	1
154.....	12.2	7	1	1,413	.....	172	135	120	.....	l. blo.	g. bl.	.....	.....
155.....	12.0	7	1	1,420	.....	177	141	123	.....	l. br.	bl.	1	.....
156.....	12.8	7	1	1,515	758	181	144	128	.....	d. blo.	bl.	1	1
157.....	12.1	7	1	1,582	784	188	150	133	.....	l. br.	gr.	.....	.....
158.....	12.8	7	2	1,379	709	176	146	127	.....	d. br.	l. br.	2	6
159.....	12.8	8	4	1,459	777	190	145	119	.....	d. br.	l. br.	3	5
160.....	12.7	8	1	1,514	810	192	144	125	.....	d. br.	l. br.	.....	.....
161.....	12.3	8	1	1,492	772	175	148	122	.....	l. br.	gr.	.....	.....
162.....	12.11	4	2	1,467	.....	180	143	122	.....	d. blo.	bl.	3	3
163.....	12.5	5	4	1,312	.....	183	141	118	.....	d. br.	bl.	3	4
164.....	12.0	4	4	1,282	.....	175	135	116	.....	d. br.	l. br.	6	2
165.....	12.2	7	3	1,333	691	174	142	124	.....	d. blo.	bl.	.....	.....

## ADDITIONAL SERIES.

Number.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.	Number.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.
166.....	12.1	4	1,392	745	370	74	87	168.....	12.11	7	1,388	725	385	71	80
167.....	12.5	6	1,458	765	390	67	66	169.....	12.8	7	1,467	790	380	70	77

## REPEATED MEASUREMENTS.

Number in 11-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.	Number in 11-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.
6.....	12.6	7	1,461	767	390	70	85	25.....	12.6	6	1,291	688	346	64	55
7.....	12.7	6	1,522	811	418	74	91	26.....	12.5	6	1,302	700	345	64	63
8.....	12.1	7	1,378	722	382	70	63	27.....	12.5	4	1,431	780	477	69	77
9.....	12.11	8	1,493	800	415	.....	91	28.....	12.5	5	1,416	735	378	66	73
10.....	12.1	7	1,452	753	387	70	80	29.....	12.5	5	1,367	712	367	68	62
11.....	12.10	7	1,475	769	387	71	76	31.....	12.10	4	1,413	754	380	66	82
13.....	12.7	7	1,477	788	387	70	76	32.....	12.5	4	1,384	750	374	68	68
14.....	12.7	6	1,360	711	383	70	74	35.....	12.8	5	1,508	820	425	70	103
15.....	12.1	6	1,401	745	380	67	80	39.....	12.2	7	1,480	800	400	70	102
17.....	12.9	6	1,415	750	395	67	79	41.....	12.1	4	1,488	810	400	77	86
18.....	12.2	6	1,411	730	380	66	66	42.....	12.9	6	1,398	785	360	64	72
19.....	12.0	6	1,395	722	370	70	78	43.....	12.7	6	1,371	725	380	66	69
20.....	12.1	6	1,457	785	370	70	88	44.....	12.5	6	1,443	780	375	70	73
21.....	12.4	6	1,481	770	405	72	99	45.....	12.6	6	1,382	720	375	69	68
22.....	12.3	6	1,461	800	390	70	85	46.....	12.8	6	1,499	770	415	67	88
24.....	12.3	6	1,480	770	410	72	85	47.....	12.6	8	1,497	760	410	77	74

## 12-year-old girls. Worcester, Mass.—Continued.

## REPEATED MEASUREMENTS—Continued.

Number in 11-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.	Number in 11-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.
48	12.1	6	1,503	810	400	74	91	79	12.10	5	1,501	740	380	65	64
49	12.2	6	1,372	785	350	67	71	80	12.2	6	1,387	735	370	63	67
50	12.1	6	1,474	790	385	67	78	81	12.9	5	1,486	735	410	67	73
51	12.6	6	1,384	740	380	68	69	82	12.11	6	1,564	850	420	79	115
52	12.10	6	1,441	790	385	75	189	83	12.6	4	1,442	730	375	69	71
53	12.4	5	1,544	810	430	77	112	34	12.1	5	1,409	725	380	68	70
56	12.6	7	1,500	810	410	72	06	87	12.3	4	1,385	740	370	64	63
57	12.2	7	1,414	735	365	69	89	88	12.2	4	1,407	780	380	72	86
58	12.11	6	1,477	770	390	67	78	89	12.0	3	1,383	760	375	67	72
59	12.5	6	1,410	760	370	73	73	96	12.10	7	1,420	760	395	71	83
60	12.2	6	1,383	745	350	64	63	98	12.3	7	1,454	750	395	72	65
61	12.3	6	1,363	730	360	66	64	101	12.9	6	1,364	735	375	67	72
63	12.2	5	1,493	790	385	71	81	103	12.9	6	1,406	750	365	67	67
64	12.11	5	1,465	785	380	75	79	106	12.2	6	1,517	820	400	74	92
65	12.5	5	1,507	780	405	74	92	108	12.1	6	1,482	745	410	72	97
66	12.3	5	1,523	795	395	71	82	109	12.10	4	1,422	750	375	71	81
67	12.10	5	1,544	845	415	78	101	110	12.4	4	1,448	760	370	66	72
68	12.0	5	1,391	725	365	65	64	111	12.0	5	1,362	705	370	70	73
69	12.6	5	1,373	720	355	67	62	112	12.0	4	1,306	680	335	62	55
70	12.7	8	1,411	737	398	70	74	113	12.1	5	1,424	755	370	70	84
71	12.8	8	1,507	810	390	70	84	115	12.11	4	1,342	720	345	63	71
72	12.8	7	1,404	760	370	71	71	116	12.4	4	1,505	780	420	68	96
73	12.11	7	1,637	895	435	81	151	118	12.4	4	1,384	740	355	65	62
76	12.4	6	1,476	770	385	73	77	119	12.11	4	1,389	725	370	65	67
78	12.9	8	1,440	765	385	70	76								

Number in 10-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.	Number in 10-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.
30	12.0	7	1,460	785	375	69	80	39	12.0	4	1,460	755	390	64	67

## ADDITIONAL MEASUREMENTS.

Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.	Forearm.	Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.	Forearm.
133		100	154			150		114	176	72	
134		104	171			151		97	154	78	
135		99	155	68		152		93	140	64	
136		95	150	66		153		92	153	71	
137		95	143	70		154		101	148	70	
138		101	161	65		155		90	157	68	
139		100	162	67		156	1,520	108	158	73	
140		98	167	71		157	1,662	102	173	80	
141		96	164	73		158	1,402	106	160	66	
142		103	165	73		159		100	146	75	
143		100	154	70		160		108	177	72	
144		92	155	72		161		98	150	72	
145		95	154	72		162		103	159	71	
146		104	165	68		163		92	148	65	
147		102	154	77		164		94	145	62	
148		103	162	70		165	1,408	98	157		
149		98	155	66							

## 13-year-old girls. Worcester, Mass.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
1	13.5	6	1	1,521	812	179	146	122	108	d. br.	d. br.	1	1
2	13.6	6	4	1,581	881	198	142	127	115	l. br.	bl.	1	2
3	13.3	6	2	1,567	784	169	149	121	80	d. blo.	bl.	2	1
4	13.5	6	2	1,466	755	174	134	116	67	br.	br.		
5	13.1	6	2	1,389	729	188	147	122	77	d. blo.	br.	2	2
6	13.3		4	1,568	831	191	145	126	107	br.	br.		
7	13.11		2	1,368	712	185	146	122	71	d. br.	br.	1	1
8	13.4		1	1,570	836	194	151	125	101	blo.	br.	1	1
9	13.3		5	1,470	799	179	150	132	146	l. br.	br.	1	3
10	13.8		3	1,545	815	187	145	124	90	br.	gr.	2	2
11	13.4	7	3	1,500	793	189	157	124	91	br.	br.	3	1
12	13.8		3	1,600	785	175	148	128	99	br.	g. bl.	1	2
13	13.6		1	1,443	765	173	140	126	79	red.	g. bl.		
14	13.1		1	1,534	811	177	139	116	100	br.	g. bl.	2	2
15	13.10		7	1,480	780	172	148	126	91	br.	br.	2	4
16	13.7		2	1,506	752	189	142	127	94	br.	gr.	1	3
17	13.3	6	3	1,485	773	183	141	123	78	bla.	br.		1
18	13.8	6	5	1,518	791	177	141	119	88	blo.	br.	4	1
19	13.4	6	3	1,481	833	176	145	120	90	br.	bl.	2	
20	13.3	6	1	1,505	784	178	145	121	86	br.	br.		
21	13.0	6	2	1,512	810	183	145	124	99	d. br.	d. gr.	2	1
22	13.8		7	1,404	743	173	145	126	86	br.	bl.	4	2
23	13.1	6	1	1,404	759	170	144	118	88	d. br.	bl.		
24	13.3	8	1	1,486	776	192	144	124	85	br.	bl.	1	3
25	13.5	6	1	1,527	806	177	136	120	95	br.	g. bl.	1	1
26	13.9	6	2	1,495	795	179	139	119	82	br.	l. br.		
27	13.4	4	2	1,369	654	165	135	114	61	bla.	l. br.	2	
28	13.3	6	5	1,471	789	179	143	120	81	br.	gr.	3	1
29	13.6	6	4	1,612	825	178	142	119	109	br.	gr.	2	1
30	13.1	6	1	1,379	719	183	144	120	89	br.	l. br.	2	2
31	13.4	6	2	1,396	686	175	139	116	70	br.	br.	3	3
32	13.5	5	2	1,516	823	183	143	125	102	br.	br.	1	5
33	13.8	5	1	1,399	743	176	146	119	64	l. br.	gr.	1	
34	13.1	5	2	1,496	793	189	148	124	107	br.	g. br.	3	2
35	13.3	5	4	1,492	780	172	140	122	81	d. br.	br.	1	4
36	13.2	7	1	1,398	734	177	140	115	68	br.	l. br.		
37	13.0	5	6	1,379	752	176	139	125	76	red.	br.	2	7
38	13.4	5	3	1,455	781	181	143	123	81	d. br.	br.	1	1
39	13.5	3	1	1,373	751	182	147	121	76	d. br.	gr.	5	
40	13.0	9	2	1,604	840	186	143	126	92	br.	gr.		
41	13.3	8	2	1,573	839	184	148	129	123	br.	l. br.	2	3
42	13.0	8	3	1,495	787	190	145	124	89	br.	bl.	2	2
43	13.9	8	3	1,560	812	190	142	122	98	bla.	bl.	2	1
44	13.1	8	1	1,563	856	188	147	128	100	dark.	br.	2	1
45	13.1	7	3	1,439	742	180	141	118	76	blo.	br.	3	2
46	13.9	7	1	1,527	809	181	143	121	96	l. br.	bl.		
47	13.0	7	3	1,413	768	178	140	120	72	br.	br.	1	3
48	13.0	7	1	1,435	767	194	143	125	83	br.	g. bl.	2	1
49	13.10	7	2	1,536	811	180	144	123	92	d. br.	gr.	1	1
50	13.3	6	3	1,483	757	177	139	122	77	br.	bl.	1	
51	13.9	5	3	1,437	782	180	141	124	88	d. blo.	bl.		3
52	13.2	4	1	1,564	791	184	148	125	86	d. blo.	bl.	1	1
53	13.6	4	3	1,367	692	174	140	119	66	red.	bl.		
54	13.2	4	2	1,562	821	186	151	133	109			2	1
55	13.10	5	1	1,464	743	182	137	114	82	br.	br.		
56	13.8	8	4	1,493	742	176	147	121	86	d. br.	br.	3	6
57	13.3	8	7	1,445	750	185	147	119	76	br.	bl.	5	4
58	13.8	8	3	1,470	770	183	149	122	83	br.	br.	3	
59	13.7	8	3	1,547	798	189	149	126	85				4
60	13.2	8	1	1,614	827	184	152	130	107	br.	bl.		
61	13.1	8	3	1,459	780	174	147	126	81	br.	bl.	1	2
62	13.10	7	1	1,507	802	177	145	126	88	d. blo.	bl.		
63	13.6	7	5	1,495	763	192	155	130	80	d. blo.	gr.	1	3
64	13.4	7	2	1,500	834	183	146	124	84	br.	br.	3	3
65	13.5	7	4	1,520	828	187	146	125	88	br.	bl.	2	1
66	13.0	6	2	1,576	831	180	150	128	160	l. br.	bl.	1	2
67	13.2	6	3	1,491	769	178	135	118	75	d. br.	br.	2	1
68	13.2	6	2	1,456	766	173	146	122	91	l. br.	g. bl.	4	2
69	13.9	6	1	1,528	786	185	140	121	84	br.	bl.		2
70	13.1	5	1	1,498	811	185	149	131	95	br.	bl.		
71	13.2	4	14	1,419	751	164	145	120	73	d. br.	br.	4	11
72	13.6	8	6	1,519	823	179	135	117	84	br.	gr.	5	2
73	13.10	7	1	1,392	750	174	151	126	70	br.	br.	1	
74	13.9	7	7	1,523	812	177	136	160	103	d. br.	g. bl.	5	1
75	13.6	7	3	1,502	782	185	146	119	78	d. br.	g. br.	3	1
76	13.4	6	3	1,423	740	179	153	116	73	d. br.	g. bl.	7	1
77	13.11	9	5	1,563	804	176	138	120	91			5	4
78	13.8	9	5	1,581	815	180	135	112	89	blo.	bl.	1	5

## 13-year-old girls. Worcester, Mass.—Continued.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
79	13.7	9	1	1,525	791	183	141	124	109	br.	g. bl.	1	---
80	13.10	9	2	1,593	890	196	156	132	109	br.	gr.	1	1
81	13.0	9	1	1,511	796	192	141	120	94	br.	gr.	3	---
82	13.6	8	4	1,581	844	196	153	135	152	br.	bl.	3	1
83	13.11	8	8	1,564	816	188	142	123	92	blo.	g. bl.	5	---
84	13.6	8	1	1,580	780	187	150	126	94	d. blo.	g. bl.	2	2
85	13.6	8	2	1,550	811	189	147	125	95	br.	gr.	---	---
86	13.1	8	8	1,455	742	175	151	130	80	l. blo.	g. bl.	---	---
87	13.2	8	1	1,448	749	182	153	122	81	l. br.	g. bl.	1	---
88	13.1	7	5	1,517	796	188	145	127	108	br.	br.	1	3
89	13.5	6	1	1,521	812	179	146	122	108	br.	br.	---	---
90	13.3	6	2	1,567	784	169	149	121	80	d. br.	bl.	2	1
91	13.5	5	2	1,465	755	174	134	116	67	br.	br.	---	---
92	13.1	6	2	1,389	729	188	147	122	77	blo.	gr.	---	---
93	13.4	5	1	1,397	743	169	145	114	69	d. blo.	gr.	1	2
94	13.1	8	1	1,609	850	187	153	126	115	br.	gr.	3	---
95	13.6	---	1	1,593	814	190	149	130	114	br.	bl.	---	1
96	13.4	---	8	1,369	664	165	135	114	61	bla.	l. br.	---	---
97	13.10	8	2	1,586	810	185	139	126	96	l. br.	bl.	1	1
98	13.8	8	8	1,571	800	182	142	124	93	d. br.	bl.	---	---
99	13.0	8	8	1,501	790	184	145	127	118	br.	g. bl.	2	1
100	13.0	6	2	1,419	796	178	144	124	98	d. br.	d. br.	3	---
101	13.8	6	4	1,341	724	180	138	116	80	br.	bl.	2	5
102	13.9	5	1	1,487	760	178	144	120	85	br.	bl.	---	---
103	13.5	8	4	1,509	776	185	154	129	87	br.	br.	1	2
104	13.0	5	2	1,445	739	185	142	123	86	br.	br.	2	1
105	13.0	4	1	1,454	748	182	143	124	82	d. br.	d. br.	1	---
106	13.0	4	8	1,528	807	187	145	121	90	br.	bl.	3	4
107	13.2	---	1	1,574	829	188	149	135	99	d. blo.	g. bl.	1	---
108	13.5	---	1	1,540	770	177	138	116	75	br.	l. br.	---	---
109	13.8	---	1	1,560	823	194	156	131	105	d. br.	bl.	1	2
110	13.8	---	1	1,560	841	194	142	123	103	d. br.	l. br.	8	---
111	13.10	9	8	1,533	---	---	181	136	116	d. br.	bl.	---	2
112	13.3	9	8	1,465	---	---	190	138	118	d. br.	g. bl.	4	---
113	13.10	8	2	1,552	---	---	174	144	130	d. blo.	g. bl.	1	2
114	13.5	8	1	1,573	---	---	185	141	124	d. br.	g. bl.	1	---
115	13.1	8	1	1,483	---	---	189	145	130	d. blo.	bl.	2	---
116	13.10	8	6	1,496	---	---	175	141	119	d. br.	g. bl.	5	3
117	13.8	7	7	1,502	---	---	182	147	127	d. blo.	bl.	3	3
118	13.6	7	2	1,557	---	---	181	141	128	d. br.	d. br.	3	8
119	13.9	7	8	1,573	---	---	183	144	122	d. br.	l. br.	2	2
120	13.2	6	2	1,430	---	---	180	144	126	d. br.	bl.	1	3
121	13.2	6	1	1,486	---	---	176	139	124	d. br.	g. bl.	1	---
122	13.10	5	1	1,456	---	---	185	145	124	d. br.	d. br.	1	2
123	13.3	5	3	1,455	---	---	187	143	123	d. br.	d. br.	3	---
124	13.10	---	2	1,580	817	189	140	128	---	d. br.	l. br.	---	1
125	13.2	---	3	1,554	833	182	149	130	---	d. br.	gr.	1	1
126	13.8	---	1	1,525	805	181	140	122	---	d. br.	gr.	---	---
127	13.8	4	2	1,397	710	177	139	121	---	d. br.	d. br.	1	2
128	13.7	5	6	1,417	---	---	176	150	131	d. br.	bl.	2	3
129	13.4	5	7	1,416	---	---	180	141	125	d. br.	bl.	3	3
130	13.10	5	1	1,466	---	---	178	145	123	d. br.	d. br.	2	1
131	13.8	5	1	1,413	---	---	179	139	120	bla.	d. br.	1	0
132	13.2	6	1	1,550	---	---	188	141	124	l. br.	l. br.	---	---
133	13.7	6	8	1,458	---	---	179	140	124	l. br.	gr.	---	3
134	13.7	6	2	1,433	---	---	178	135	116	red.	bl.	5	1
135	13.10	6	5	1,437	---	---	180	140	122	d. br.	bl.	3	1
136	13.8	7	1	1,509	---	---	175	145	123	d. br.	gr.	---	---
137	13.2	7	5	1,530	804	189	144	125	---	l. br.	g. br.	2	2
138	13.7	7	4	1,370	715	181	143	125	---	d. br.	l. br.	1	6
139	13.5	7	3	1,400	711	180	142	117	---	d. blo.	g. bl.	---	1
140	13.2	7	2	1,476	755	189	134	114	---	d. br.	gr.	---	3
141	13.2	5	7	1,437	---	---	185	148	125	d. br.	d. br.	6	---

## ADDITIONAL SERIES.

Number.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.
142	13.0	7	1,484	755	415	76	87

## 13-year-old girls. Worcester, Mass.—Continued.

## REPEATED MEASUREMENTS.

Number in 12-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.	Number in 12-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.
7	13.7	9	1,468	788	415	74	84	55	13.6	6	1,620	870	435	82	125
9	13.6	8	1,552	808	402	72	83	56	13.5	5	1,402	760	385	67	73
13	13.11	8	1,476	768	405	75	84	58	13.2	8	1,392	745	380	69	73
14	13.2	8	1,750	894	488	77	110	59	13.5	8	1,522	800	405	72	90
15	13.9	8	1,529	780	420	81	81	60	13.1	8	1,539	795	410	74	93
16	13.0	6	1,440	764	384	65	71	61	13.8	7	1,417	765	385	72	91
17	13.9	8	1,582	842	415	74	96	62	13.4	7	1,465	780	390	71	72
18	13.3	7	1,410	752	366	73	75	63	13.3	7	1,532	830	400	69	77
20	13.3	8	1,538	813	425	71	79	66	13.8	7	1,400	735	385	70	69
21	13.0	8	1,602	865	408	73	82	67	13.11	7	1,493	755	415	74	98
22	13.9	7	1,473	804	398	72	82	68	13.7	6	1,505	790	400	69	84
23	13.4	7	1,475	825	405	71	84	70	13.7	6	1,537	820	410	76	86
25	13.8	7	1,435	758	388	71	80	71	13.9	5	1,632	820	450	75	96
26	13.5	7	1,465	850	400	65	85	72	13.2	5	1,498	785	395	75	83
27	13.2	7	1,556	804	427	76	90	73	13.2	5	1,466	790	390	74	87
28	13.4	8	1,413	750	370	67	68	75	13.4	8	1,464	765	390	65	79
29	13.3	6	1,527	830	410	76	117	77	13.9	8	1,538	815	410	74	88
30	13.1	7	1,479	765	395	70	79	78	13.2	7	1,529	800	395	73	82
31	13.2	6	1,451	787	392	69	83	79	13.10	7	1,544	805	415	73	100
32	13.1	6	1,485	780	382	65	76	81	13.2	6	1,481	785	385	70	76
33	13.3	8	1,611	820	450	70	104	82	13.5	6	1,498	775	400	76	94
35	13.6	6	1,473	890	400	81	98	83	13.5	6	1,450	755	380	68	65
37	13.6	4	1,426	775	385	71	84	90	13.3	7	1,555	810	420	71	98
39	13.6	8	1,482	810	395	75	83	93	13.9	9	1,488	815	410	75	94
40	13.5	7	1,568	770	420	68	77	94	13.11	9	1,625	845	445	73	101
42	13.9	5	1,492	820	405	68	100	102	13.11	9	1,605	825	455	72	91
43	13.10	7	1,435	740	400	68	67	103	13.10	7	1,470	805	380	68	85
46	13.1	7	1,501	820	410	80	117	104	13.9	7	1,522	745	385	69	69
47	13.1	5	1,575	850	420	80	132	106	13.7	7	1,583	825	435	74	93
49	13.0	6	1,509	840	405	73	91	107	13.1	7	1,502	820	395	69	92
51	13.11	6	1,504	775	395	70	78	109	13.8	6	1,653	855	465	79	118
52	13.1	6	1,416	770	375	75	83	110	13.11	6	1,482	755	430	72	87
53	13.11	8	1,562	810	450	79	102	111	13.8	6	1,521	800	415	79	97
54	13.6	8	1,605	890	430	80	136	113	13.9	5	1,490	780	395	70	85

Number in 11-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.	Number in 11-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.
16	13.1	7	1,462	755	380	71	71	55	13.0	4	1,540	835	420	72	102

## ADDITIONAL MEASUREMENTS.

Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.	Forearm.	Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.	Forearm.
107	1,552	101	-----	-----	-----	131	-----	96	143	-----	-----
108	1,560	102	-----	-----	-----	132	-----	107	170	72	-----
109	1,560	108	-----	-----	-----	133	-----	103	168	69	-----
110	1,546	103	-----	-----	-----	134	-----	103	173	67	-----
123	-----	106	-----	-----	-----	135	-----	103	160	70	-----
124	1,668	112	174	-----	-----	136	-----	100	155	72	-----
125	1,565	103	162	75	-----	137	-----	104	163	66	-----
126	1,498	99	153	68	-----	138	1,513	104	147	68	-----
127	1,470	100	142	-----	-----	139	-----	1,406	96	153	-----
128	-----	109	164	73	-----	140	-----	1,470	103	156	-----
129	-----	95	139	73	-----	141	-----	100	165	74	385
130	-----	101	169	68	-----						

## STATISTICS OF GROWTH.

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## 14-year-old girls. Worcester, Mass.

ser.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
-----	14.5	-----	1	1,617	857	190	150	132	116	blo.	bl.	1	1
-----	14.11	-----	3	1,496	806	182	148	131	99	br.	bl.	-----	2
-----	14.9	-----	2	1,583	850	192	149	131	110	d. br.	bl.	-----	1
-----	14.7	-----	3	1,450	813	176	140	122	94	d. br.	gr.	-----	2
-----	14.4	-----	2	1,537	824	174	148	126	91	blo.	bl.	-----	5
-----	14.2	-----	3	1,590	833	184	140	127	103	bla.	bl.	-----	2
-----	14.7	9	1	1,631	852	190	144	125	125	blo.	bl.	-----	-----
-----	14.3	8	1	1,649	862	188	149	130	113	br.	bl.	-----	2
-----	14.6	-----	1	1,622	856	189	143	127	103	blo.	g. bl.	-----	-----
-----	14.2	-----	3	1,647	841	179	151	125	114	d. br.	bl.	-----	1
-----	14.9	8	1	1,630	847	195	148	133	114	br.	g. bl.	-----	1
-----	14.4	-----	2	1,593	820	179	144	125	106	br.	g. bl.	-----	1
-----	14.9	-----	2	1,480	799	182	134	122	86	d. br.	gr.	-----	1
-----	14.10	8	8	1,492	775	176	145	125	89	br.	d. br.	-----	1
-----	14.10	-----	2	1,467	769	182	140	120	79	bla.	d. br.	-----	4
-----	14.3	-----	4	1,599	847	190	143	124	108	br.	bl.	-----	2
-----	14.3	7	1	1,656	855	182	150	135	112	br.	bl.	-----	1
-----	14.2	-----	2	1,395	730	176	150	124	83	bla.	d. br.	-----	1
-----	14.6	-----	2	1,460	757	164	131	113	80	br.	bl.	-----	-----
-----	14.8	8	3	1,585	798	184	145	124	108	br.	g. bl.	-----	1
-----	14.9	-----	1	1,478	783	191	151	128	103	d. br.	gr.	-----	1
-----	14.10	8	2	1,618	851	188	146	129	129	br.	g. bl.	-----	1
-----	14.7	-----	1	1,567	821	193	150	125	92	blo.	bl.	-----	3
-----	14.9	6	3	1,514	777	180	151	128	90	bla.	g. br.	-----	-----
-----	14.1	7	4	1,687	880	184	148	131	175	br.	l. br.	-----	1
-----	14.6	9	5	1,582	810	182	141	122	99	br.	bl.	-----	1
-----	14.1	8	1	1,650	895	192	151	134	145	red.	bl.	-----	-----
-----	14.5	8	1	1,448	776	202	150	128	95	bla.	gr.	-----	2
-----	14.8	8	4	1,440	792	190	140	122	88	br.	bl.	-----	4
-----	14.8	8	4	1,544	821	188	148	128	94	br.	bl.	-----	2
-----	14.4	6	4	1,557	804	177	146	124	97	bla.	g. bl.	-----	-----
-----	14.9	6	1	1,591	813	177	139	119	99	blo.	g. bl.	-----	2
-----	14.0	6	2	1,530	805	175	144	112	88	d. br.	g. bl.	-----	3
-----	14.4	7	2	1,591	859	193	148	127	116	br.	gr.	-----	1
-----	14.5	7	3	1,629	835	179	147	123	103	d. br.	l. br.	-----	3
-----	14.2	7	5	1,404	726	181	135	113	60	br.	g. br.	-----	1
-----	14.4	7	5	1,421	731	170	142	124	76	d. br.	l. br.	-----	5
-----	14.6	7	1	1,451	759	171	136	124	79	br.	gr.	-----	2
-----	14.0	7	4	1,431	749	176	136	115	73	d. blo.	l. br.	-----	4
-----	14.7	7	3	1,574	797	178	145	127	134	blo.	bl.	-----	1
-----	14.2	5	11	1,480	799	183	148	130	92	br.	br.	-----	12
-----	14.6	9	4	1,517	788	182	143	122	101	br.	bl.	-----	3
-----	14.6	9	8	1,560	810	193	149	122	103	br.	gr.	-----	4
-----	14.0	8	4	1,420	772	173	135	119	77	red.	bl.	-----	1
-----	14.4	8	2	1,523	790	180	136	120	78	br.	bl.	-----	1
-----	14.0	8	2	1,639	832	187	150	133	141	bla.	bl.	-----	1
-----	14.2	8	1	1,502	805	201	149	120	88	br.	gr.	-----	-----
-----	14.2	7	4	1,518	801	183	140	125	90	d. br.	br.	-----	3
-----	14.7	7	1	1,457	795	189	147	127	100	d. br.	gr.	-----	-----
-----	14.0	7	1	1,549	786	189	151	121	82	l. br.	bl.	-----	-----
-----	14.1	6	8	1,506	802	170	136	118	105	d. br.	l. bl.	-----	6
-----	14.6	7	1	1,422	762	174	145	126	78	br.	br.	-----	1
-----	14.3	4	1	1,455	789	182	144	125	95	br.	gr.	-----	2
-----	14.7	4	1	1,575	846	177	148	129	126	d. br.	bl.	-----	1
-----	14.1	8	2	1,509	805	181	145	124	83	d. blo.	bl.	-----	3
-----	14.2	8	1	1,430	725	186	142	121	89	br.	bl.	-----	1
-----	14.2	7	3	1,460	753	185	144	129	77	d. br.	gr.	-----	2
-----	14.2	7	2	1,554	835	179	143	126	104	blo.	gr.	-----	1
-----	14.3	7	4	1,564	806	188	149	135	92	br.	bl.	-----	5
-----	14.3	5	9	1,546	820	180	152	126	115	d. br.	br.	-----	4
-----	14.8	4	1	1,492	784	180	152	122	94	br.	gr.	-----	4
-----	14.2	4	1	1,591	871	189	142	128	114	br.	l. br.	-----	1
-----	14.5	8	1	1,605	819	185	154	137	99	br.	g. bl.	-----	-----
-----	14.10	8	8	1,581	801	180	136	118	78	l. br.	d. br.	-----	5
-----	14.10	8	2	1,589	815	182	147	126	95	d. br.	gr.	-----	-----
-----	14.6	9	2	1,554	824	188	142	125	96	d. br.	l. br.	-----	1
-----	14.8	9	1	1,441	769	185	138	119	72	d. br.	gr.	-----	1
-----	14.11	9	3	1,481	807	182	147	127	97	d. br.	br.	-----	1
-----	14.11	9	2	1,615	841	182	151	127	120	br.	g. bl.	-----	1
-----	14.5	7	3	1,510	761	181	145	127	108	br.	bl.	-----	1
-----	14.8	6	2	1,365	705	180	144	122	72	br.	gr.	-----	1
-----	14.5	6	2	1,544	847	174	144	122	105	br.	g. bl.	-----	-----
-----	14.5	8	3	1,538	827	176	142	126	88	br.	bl.	-----	5
-----	14.11	6	5	1,515	773	178	150	137	113	bla.	d. br.	-----	2
-----	14.7	9	2	1,647	862	190	144	125	112	br.	g. bl.	-----	-----
-----	14.0	8	2	1,554	885	182	138	125	112	d. br.	d. br.	-----	2
-----	14.0	8	5	1,564	852	181	141	120	106	br.	br.	-----	5
-----	14.10	8	1	1,581	811	185	134	116	96	d. blo.	gr.	-----	-----
-----	14.6	8	3	1,593	798	177	139	125	101	br.	bl.	-----	3
-----	14.3	8	2	1,487	781	180	139	120	85	br.	g. bl.	-----	2
-----	14.2	4	2	1,410	737	185	147	122	72	br.	gr.	-----	1



## 14-year-old girls. Worcester, Mass.—Continued.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
82	14.4	7	1	1,391	689	170	141	121	71	br.	br.	1	—
83	14.5	7	1	1,405	745	182	138	119	69	l. br.	bl.	2	—
84	14.0	7	1	1,451	794	182	139	121	104	br.	br.	1	1
85	14.9	—	1	1,585	812	194	145	132	97	l. br.	bl.	—	—
86	14.5	—	—	1,561	792	180	143	128	107	bla.	br.	—	—
87	14.3	—	—	1,453	791	182	139	123	100	br.	br.	1	3
88	14.11	—	—	1,620	876	186	147	138	131	l. br.	d. br.	3	2
89	14.2	—	—	1,513	812	182	153	133	105	blo.	gr.	1	1
90	14.11	—	—	1,900	858	195	148	127	147	d. br.	d. br.	4	2
91	14.1	—	—	1,618	824	178	146	123	120	d. br.	d. br.	4	1
92	14.5	—	—	1,980	915	178	145	124	122	d. br.	g. bl.	1	—
93	14.0	—	—	1,618	812	178	143	123	100	br.	g. bl.	1	2
94	14.11	—	—	1,578	824	183	144	123	98	br.	d. br.	1	1
95	14.9	—	—	1,580	814	187	139	125	109	l. br.	d. br.	1	2
96	14.2	—	—	1,535	803	176	146	126	94	d. br.	bl.	1	1
97	14.4	6	—	1,541	—	177	135	121	—	l. br.	gr.	4	1
98	14.5	—	—	1,521	797	177	136	116	—	d. br.	g. bl.	3	1
99	14.0	8	—	1,642	857	176	149	130	—	l. br.	l. bl.	3	1
100	14.4	—	—	1,540	816	187	141	127	119	d. br.	gr.	1	—
101	14.1	—	—	1,475	—	180	142	116	—	d. br.	d. br.	1	1
102	14.0	—	—	1,480	—	185	146	125	—	d. br.	bl.	2	1
103	14.7	—	—	1,598	—	196	150	128	—	—	—	1	6
104	14.7	—	—	1,540	—	180	141	122	—	d. br.	g. bl.	1	3
105	14.1	—	—	1,492	—	187	145	123	—	bla.	l. br.	—	1
106	14.10	—	—	1,532	—	186	144	126	—	d. br.	g. bl.	1	1
107	14.4	—	—	1,553	—	184	145	127	—	d. br.	l. br.	1	—
108	14.4	—	—	1,577	—	183	138	124	—	—	—	1	—
109	14.4	—	—	1,468	—	183	142	130	—	bla.	d. br.	5	—
110	14.2	—	—	1,696	902	188	152	136	—	br.	g. bl.	3	1
111	14.6	—	—	1,583	887	188	145	128	—	d. br.	l. br.	1	1
112	14.5	—	—	1,408	736	180	132	112	66	d. br.	gr.	1	1
113	14.3	—	—	1,575	—	188	146	131	126	d. br.	d. br.	—	—
114	14.6	—	—	1,501	—	170	143	125	—	d. br.	bl.	2	2
115	14.6	—	—	1,457	827	177	130	117	—	l. br.	gr.	—	—

\* Twin.

## ADDITIONAL SERIES.

Number.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.	Number.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.
116	14.7	9	1,610	877	432	78	115	118	14.0	7	1,476	770	385	68	80
117	14.6	9	1,642	890	435	76	115								

## REPEATED MEASUREMENTS.

Number in 18-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.	Number in 18-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.
1	14.4	7	1,523	820	420	72	115	50	14.4	7	1,556	805	420	70	95
9	14.3	—	1,551	857	437	81	143	55	14.10	—	1,482	770	405	66	86
11	14.5	—	1,590	900	450	—	102	60	14.1	—	1,662	980	440	121	121
13	14.7	—	1,473	808	403	71	85	62	14.11	—	1,536	795	385	66	82
16	14.6	—	1,525	790	435	—	100	64	14.4	—	1,549	875	420	101	101
19	14.4	—	1,510	870	428	75	102	65	14.5	—	1,554	880	430	71	88
21	13.11	—	1,571	862	432	73	114	66	14.9	—	1,584	840	440	141	141
23	14.2	—	1,481	790	380	74	97	68	14.3	—	1,502	815	420	78	110
25	14.6	—	1,561	850	425	—	107	73	14.5	—	1,442	775	390	81	81
26	14.10	—	1,547	825	400	73	82	75	14.7	—	1,554	825	415	71	83
30	14.2	—	1,575	835	435	73	104	76	14.7	—	1,498	800	415	88	88
31	14.4	—	1,464	750	400	76	80	84	14.7	—	1,612	825	430	76	102
32	14.5	6	1,528	840	405	73	108	85	14.6	—	1,572	845	435	74	103
33	14.7	6	1,446	780	380	73	71	87	14.0	—	1,515	800	400	78	103
36	14.3	8	1,490	790	410	72	85	97	14.11	—	1,612	850	420	74	104
41	14.4	9	1,632	890	425	74	134	98	14.9	—	1,640	870	435	76	142
43	14.11	9	1,598	836	430	73	106	99	14.1	—	1,547	825	420	74	104
45	14.1	8	1,508	780	400	73	82	100	14.1	—	1,450	815	395	71	99
47	14.1	—	1,488	815	380	75	82	103	14.5	—	1,602	890	415	99	99
48	14.6	—	1,497	790	405	75	106	105	14.3	—	1,513	815	410	77	97
49	14.11	—	1,620	866	440	78	106	106	14.6	—	1,554	835	420	74	97

## 14-year-old girls. Worcester, Mass.—Continued.

## REPEATED MEASUREMENTS—Continued.

Number in 12-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.	Number in 12-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.
5 .....	14.1	9	1,615	860	433	75	119	8 .....	14.1	9	1,563	815	417	79	88
6 .....	14.0	---	1,658	854	440	73	97	87 .....	14.0	8	1,526	815	400	71	83

## ADDITIONAL MEASUREMENTS.

Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.	Forearm.	Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.	Forearm.
88 .....	1,665	101	---	---	---	98 .....	---	101	168	79	---
89 .....	1,545	103	---	---	---	99 .....	---	101	162	82	---
90 .....	1,596	106	---	---	---	100 .....	1,562	103	---	---	---
91 .....	1,663	104	---	---	---	110 .....	1,708	111	158	---	---
92 .....	1,665	104	---	---	---	111 .....	1,579	102	168	77	---
93 .....	1,665	98	---	---	---	112 .....	---	93	189	67	380
94 .....	1,628	98	---	---	---	113 .....	---	109	164	79	440
95 .....	1,612	105	---	---	---	114 .....	---	96	163	72	415
96 .....	1,543	97	---	---	---	115 .....	1,467	112	165	---	---
97 .....	---	100	157	71	---						

## 15-year-old girls. Worcester, Mass.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
1 .....	15.3	---	1	1,547	844	181	146	124	107	blo.	bl.	---	---
2 .....	15.4	9	1	1,594	847	176	147	123	99	d. br.	bl.	---	1
3 .....	15.10	---	1	1,552	823	177	142	126	102	d. br.	bl.	---	1
4 .....	15.11	---	1	1,548	803	186	145	125	100	l. br.	d. br.	---	2
5 .....	15.5	---	3	1,592	817	185	148	126	108	d. br.	br.	1	3
6 .....	15.2	---	2	1,614	863	173	141	121	109	br.	br.	1	1
7 .....	15.7	---	1	1,638	859	184	148	128	107	blo.	g. br.	---	---
8 .....	15.1	8	2	1,608	855	172	145	126	110	d. br.	bl.	---	1
9 .....	15.11	---	2	1,574	833	185	138	129	118	d. br.	d. br.	1	1
10 .....	15.10	---	2	1,591	867	190	144	126	119	br.	bl.	1	2
11 .....	15.2	---	4	1,612	822	183	150	126	127	l. br.	bl.	2	1
12 .....	15.0	6	1	1,410	754	182	137	118	73	br.	g. bl.	---	1
13 .....	15.7	8	1	1,600	807	---	---	---	87	blo.	bl.	2	3
14 .....	15.11	8	1	1,625	861	---	---	---	123	br.	br.	1	5
15 .....	15.2	8	2	1,552	826	189	142	122	94	br.	l. br.	1	1
16 .....	15.9	8	4	1,513	790	192	148	131	100	l. br.	bl.	1	2
17 .....	15.7	7	1	1,604	875	187	146	122	127	br.	g. bl.	---	---
18 .....	15.7	7	2	1,516	841	180	146	125	91	br.	gr.	2	---
19 .....	15.11	9	1	1,561	843	181	153	123	105	br.	bl.	---	---
20 .....	15.10	9	1	1,583	856	182	148	124	91	redbr.	br.	---	1
21 .....	15.0	8	3	1,508	817	178	133	121	106	blo.	l. bl.	1	1
22 .....	15.0	8	1	1,548	812	180	148	126	109	d. br.	d. br.	---	---
23 .....	15.0	8	1	1,601	832	190	149	124	115	d. br.	l. br.	---	3
24 .....	15.5	8	3	1,523	789	178	147	125	90	d. br.	l. br.	2	2
25 .....	15.0	7	3	1,597	847	181	140	128	104	l. br.	bl.	3	2
26 .....	15.7	8	2	1,637	850	187	158	134	116	br.	bl.	4	1
27 .....	15.3	8	4	1,568	801	181	141	124	98	br.	gr.	1	2
28 .....	15.8	9	1	1,539	818	191	146	128	105	br.	bl.	---	---
29 .....	15.9	9	1	1,777	888	194	151	130	126	br.	br.	---	3
30 .....	15.2	9	2	1,599	836	178	145	129	105	l. br.	g. bl.	1	2
31 .....	15.6	9	4	1,555	842	184	146	123	103	br.	gr.	---	3
32 .....	15.9	9	3	1,594	841	192	148	121	102	br.	g. bl.	8	1
33 .....	15.1	9	5	1,483	825	187	147	127	105	br.	bl.	1	5
34 .....	15.2	9	1	1,564	781	176	150	125	96	bla.	br.	2	2
35 .....	15.0	9	3	1,561	826	183	144	122	90	br.	g. bl.	2	---

\* Twin.

## 15-year-old girls. Worcester, Mass.—Continued.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
36.	15.1	9	8	1,597	868	187	150	127	100	br.	bl.	5	4
37.	15.6	8	6	1,571	863	184	143	123	94	br.	gr.	4	4
38.	15.10	9	1	1,494	847	185	152	128	100	d. br.	bl.	2	1
39.	15.5	8	1	1,523	814	180	135	122	91	blo.	gr.	1	1
40.	15.9	8	3	1,538	823	181	143	128	89	br.	bl.	1	1
41.	15.9	8	1	1,615	851	192	148	125	109	blo.	g. bl.	3	3
42.	15.10	6	6	1,589	825	182	144	126	95	br.	g. br.	2	2
43.	15.6	8	1	1,576	863	183	140	121	84	d. br.	g. bl.	1	1
44.	15.1	8	2	1,630	827	180	137	126	103	br.	gr.	1	1
45.	15.5	7	1	1,577	830	194	142	128	112	br.	g. bl.	1	1
46.	15.1	8	1	1,565	822	190	146	128	98	l. br.	gr.	1	1
47.	15.7	9	1	1,581	821	178	140	121	92	d. blo.	g. bl.	2	1
48.	15.7	Jr.	2	1,610	843	188	148	127	123	l. br.	gr.	1	1
49.	15.5	4	9	1,606	875	189	153	135	121	red br.	gr.	1	3
50.	15.7		1	1,571	857	191	147	122	87	blo.	bl.	1	3
51.	15.8		2	1,584	823	187	142	123	91	d. br.	bl.	3	2
52.	15.4	H. S.	3	1,493	832	177	151	130	96	br.	br.	1	2
53.	15.0		2	1,580	864	180	146	129	144	d. br.	g. bl.	1	1
54.	15.4	H. S.	1	1,580	857	184	151	130	101	l. br.	g. bl.		
55.	15.6		1	1,580	837	184	151	130	102	l. br.	g. bl.		
56.	15.6		1	1,581	813	184	145	128	111	red.	d. br.	1	1
57.	15.3	2d yr.	4	1,555	857	190	138	122	124	d. br.	gr.	3	1
58.	15.0		6	1,629	876	186	147	128	131	l. br.	d. br.	3	2
59.	15.11		1	1,592	850	185	140	124	121	d. br.	d. br.		
60.	15.1		2	1,504	787	180	146	127	101	d. br.	d. br.	1	4
61.	15.9		7	1,645	871	188	145	130	130	br.	bl.	2	4
62.	15.10	2d yr.	2	1,522	827	191	148	127	117	d. br.	g. bl.	6	4
63.	15.10		6	1,547	855	183	155	131	108	d. br.	d. br.	3	1
64.	15.6	2d yr.	3	1,572	845	184	143	120	106	d. blo.	g. bl.	1	2
65.	15.8		1	1,688	852	188	154	132	105	br.	br.	1	1
66.	15.4	1st yr.	1	1,455	752	189	140	119	77	d. br.	gr.	2	1
67.	15.10		6	1,548	835	184	145	128	95	br.	gr.	1	2
68.	15.4	1st yr.	5	1,389	836	183	141	123	113	br.	bl.	1	1
69.	15.2		2	1,578	838	187	145	127	108	d. br.	d. br.	5	1
70.	15.5		2	1,602	812	188	152	131	107	br.	g. bl.	1	1
71.	15.2	H. S.		1,631	872	190	148	136	135	l. br.	gr.	1	1
72.	15.5	H. S.	6	1,614	866	188	147	125	110	d. br.	bl.	3	3
73.	15.8	H. S.	3	1,518	848	185	150	133	107	br.	gr.	1	2
74.	15.7		3	1,555	803	187	144	128	109	d. blo.	g. bl.	2	2
75.	15.10		2	1,596	837	178	145	131	110	br.	gr.	1	1
76.	15.7		1	1,584	863	192	151	132	115			1	1
77.	15.5		1	1,554	810	191	150	126	110	br.	br.		
78.	15.3		3	1,454	820	181	140	122	98	d. br.	g. bl.	2	1
79.	15.4		4	1,534	821	186	145	122	102	d. br.	l. br.	1	1
80.	15.5		1	1,674	903	185	142	133	133	br.	g. bl.	1	1
81.	15.4		1	1,592	850	181	144	126	116	br.	br.	3	3
82.	15.7		7	1,555	823	184	151	119	105	red br.	g. bl.	4	4
83.	15.0			1,630	876	176	141	123	117	d. br.	l. br.	1	1
84.	15.7		1	1,565	832	187	144	126	96	d. br.	l. br.	1	3
85.	15.0		1	1,615	862	175	148	136	143	d. br.	gr.	1	1
86.	15.4		2	1,549	826	193	147	136	134	d. blo.	bl.	1	2
87.	15.5		4	1,568	834	185	145	125	111	d. br.	l. br.	4	4
88.	15.7	H. S.	3	1,520	801	186	146	126	103	br.	g. bl.	1	1
89.	15.3		9	1,576	810	196	148	121	104	d. br.	gr.	5	3
90.	15.0		6	1,511	846	186	144	127	108	l. br.	bl.	1	5
91.	15.10		1	1,589	801	179	151	128	96	bl.	d. br.	2	1
92.	15.8		2	1,640	879	176	143	130	128	d. br.	gr.	1	1
93.	15.4		1	1,582	871	189	150	131	97	d. blo.	gr.	2	1
94.	15.3		1	1,555	884	192	142	127	118	l. br.	g. bl.	1	1
95.	15.3		5	1,590	766	178	147	125	82	d. br.	g. br.	4	1
96.	15.11		3	1,548	845	184	147	128	112	l. br.	g. bl.	2	4
97.	15.7		6	1,567	853	187	148	133	107	d. br.	d. br.	4	3
98.	15.7		1	1,544	841	180	141	126	97	red br.	gr.	2	1
99.	15.6		1	1,621	816	183	136	130	95	bia.	br.	1	2
100.	15.4		1	1,620		186	150	132		d. blo.	gr.	1	4
101.	15.4	9	1	1,500		195	150	130		d. br.	g. bl.	4	4
102.	15.6	5	5	1,566		183	146	121		d. br.	bl.	2	2
103.	15.1	9	4	1,612		186	144	131		d. br.	d. br.	6	2
104.	15.7	8	1	1,522		177	144	122		d. br.	l. br.	1	1
105.	15.0	7	3	1,388		181	133	120		d. br.	g. bl.	1	1
106.	15.0	7	1	1,600		180	141	127		d. br.	g. bl.		
107.	15.2	4	3	1,390	744	177	141	119		l. br.	g. br.	2	3
108.	15.1	8	2	1,698	894	178	143	129		d. br.	g. bl.	4	3
109.	15.9	9	2	1,598	870	187	143	125	105	d. br.	l. br.	1	1
110.	15.6	9	4	1,488		187	144	121	98	d. br.	bl.	3	1
111.	15.3	8	5	1,615		180	139	122	108	d. br.	gr.	8	1

\* Stepsister.

### ADDITIONAL SERIES.

Number.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.
112.....	15.9	8	1,480	800	400	71	100

Number in 14-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.	Number in 14-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.
6	15.2	9	1,613	856	432	70	118	37	15.7	8	1,582	785	425	70	83
8	15.7		1,673	890	441	76	117	46	15.7	9	1,627	850	465	77	157
9	15.10	9	1,650	892	438	74	113	47	15.3	9	1,529	825	420	75	91
11	15.9	9	1,632	902	430	78	116	48	15.3		1,529	806	415	72	93
12	15.5	9	1,606	817	420	79	111	50	15.8	8	1,605	820	430	73	99
14	15.9	9	1,541	812	418	76	97	52	15.6		1,450	795	380	69	91
16	15.5	8	1,605	810	450		111	56	15.1	9	1,473	751	425	72	103
17	15.3	8	1,698	890	481	82	123	57	15.2	8	1,535	805	420	71	93
18	15.2	8	1,462	765	390	70	100	58	15.2	8	1,564	850	410	71	113
20	15.8	8	1,622	838	441	76	122	63	15.6	9	1,614	835	445	72	103
23	15.8	8	1,632	870	447	77	97	64	15.10	8	1,633	820	435	71	88
24	15.2	7	1,575	825	450		101	65	15.11	9	1,616	845	430	73	97
27	15.2	9	1,639	900	435	79	144	70	15.6	8	1,580	815	425	70	127
28	15.6	9	1,465	810	410	75	100	73	15.5	9	1,543	840	410	77	91
30	15.8	9	1,575	855	430	77	105	74	15.6	7	1,542	825	465		124
34	15.6	8	1,602	865	430	78	117	76	15.2	9	1,559	875	415	75	111
36	15.0	8	1,476	770	380	68	68								

Number in 13-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.	Number in 13-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.
7 .....	15. 1	9	1, 446	772	398	75	83	83 .....	15. 0	9	1, 616	880	430	75	99

Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.	Forearm.
48	1,585	112			
49	1,673	114			
50	1,627	108			
51	1,557	106			
52	1,477	105			
53	1,590	105			
54	1,616	107			
55	1,616	107			
56	1,600	114			
57	1,679	103			
58	1,685	101			
59	1,612	102			
60	1,506	101			
61	1,635	106			
62	1,580	110			
63	1,517	106			
64	1,577	102			
65	1,637	114			
66	1,476	100			
67	1,586	104			
68	1,604	103			
69	1,575	114			
70	1,600	102			
71	1,622	107			
72	1,641	103			
73	1,504	112			
74	1,624	101			
75	1,589	106			
76	1,626	101			

Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.	Forearm.
77	1,570	111			
78	1,410	97			
79	1,558	108			
80	1,639	113			
81	1,586	103			
82	1,584	104			
83	1,664	110			
84	1,597	100			
85	1,680	95			
86	1,544	102			
87	1,515	106			
88	1,572	105			
89	1,594	112			
90	1,471	104			
91	1,690	106			
92	1,618	117			
93	1,560	108			
94	1,638	103			
95	1,590	103			
96	1,559	118			
97	1,577	110			
98	1,530	100			
99	1,655	106			
100	1,425	107			
101		157			
102		113	120	75	
103		109	161	76	420
104		102	160	70	330
105		100	160	79	440

## 16-year-old girls. Worcester, Mass.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
1	16.9		4	1.642	859	186	142	131	115	br.	gr.	4	4
2	16.8	9	5	1.596	841	186	139	118	117	l. br.	bl.	4	4
3	16.6		1	1.553	830	188	148	125	104	br.	l. bl.	2	2
4	16.8		5	1.525	827	193	152	124	96	l. br.	bl.	1	1
5	16.9		4	1.607	840	181	140	127	123	aub.	br.	2	2
6	16.8		4	1.595	834	179	144	117	92	d. br.	bl.	1	1
7	16.2	9	5	1.520	817	184	143	128	99	blo.	g. bl.	3	3
8	16.7		2	1.602	841	171	136	125	102	blo.	l. br.	1	1
9	16.0		1	1.510	792	174	136	120	103	aub.	d. br.	1	1
10	16.10	9	2	1.580	853	189	152	135	123	d. br.	d. br.	1	1
11	16.2	9	4	1.549	837	183	144	129	111	br.	d. br.	3	3
12	16.6	9	4	1.483	784	177	143	128	101	br.	bl.	1	1
13	16.2	9	6	1.515	818	183	147	127	94	bla.	l. br.	3	2
14	16.1	9	2	1.544	781	177	146	124	96	d. br.	gr.	1	3
15	16.0	8	4	1.482	788	185	141	122	90	br.	bl.	2	1
16	16.0	8	1	1.494	792	182	143	127	86	d. br.	br.		
17	16.0	8	1	1.591	840	188	136	124	110	d. br.	bl.	6	2
18	16.1	9	1	1.580	826	185	140	125	105	blo.	g. bl.	1	1
19	16.9	8	1	1.503	808	182	141	122	92	d. blo.	bl.	1	1
20	16.8	6	4	1.514	815	165	130	123	94	l. br.	bl.	4	4
21	16.0	8	8	1.542	777	193	145	125	94	l. br.	l. br.	1	1
22	16.5	8	2	1.515	795	180	136	120	110	br.	bl.	1	1
23	16.6	8	2	1.504	828	180	144	122	108	d. br.	l. br.	1	1
24	16.8	9	7	1.582	846	187	144	124	108	br.	g. bl.	1	5
25	16.0	N. N. S. S.	2	1.596	844	184	142	122	113			2	
26	16.8	N. N. S. S.	1	1.591	856	184	130	117	100				
27	16.10	H. S. S.	2	1.630	891	194	147	128	126	br.	br.	1	
28	16.7	Jr.	2	1.650	886	183	146	129	158	l. br.	bl.	2	2
29	16.6	H. S. S.	3	1.613	874	188	146	124	111	br.	g. bl.	1	2
30	16.11	H. S. S.	2	1.606	875	182	148	128	123	d. br.	g. bl.	1	1
31	16.9	H. S. S.	2	1.579	847	185	142	127	104	br.	gr.	1	
32	16.10	H. S. S.	2	1.646	872	188	142	124	122	l. br.	gr.	1	
33	16.2	H. S. S.	1	1.567	848	181	149	149	113	l. br.	bl.	1	1
34	16.2	H. S. S.	2	1.527	816	194	146	129	90	d. br.	bl.	1	1
35	16.5	H. S. S.	2	1.580	824	193	148	128	114	br.	g. bl.	3	1
36	16.8	H. S. S.	5	1.616	850	181	141	124	107	d. br.	d. br.	2	2
37	16.1	H. S. S.	4	1.656	850	176	148	137	123	br.	bl.	2	2
38	16.10	2d yr.	4	1.683	910	190	150	130	132	d. br.	gr.	2	2
39	16.11	H. S. S.	3	1.650	849	190	149	130	113	d. br.	d. br.	1	1
40	16.11	H. S. S.	2	1.710	914	180	145	125	130	d. br.	br.	1	1
41	16.6	H. S. S.	1	1.581	818	184	145	128	112	aub.	d. br.	3	1
42	16.5	2d yr.	5	1.501	799	175	142	125	82	br.	bl.	5	5
43	16.11	H. S. S.	1	1.575	854	184	148	131	119	d. br.	br.	2	1
44	16.2	2d yr.	1	1.589	834	194	147	130	114	d. br.	gr.	1	1
45	16.6	2d yr.	8	1.547	808	179	136	118	94	l. br.	l. br.	1	1
46	16.3	H. S. S.	1	1.530	836	184	150	129	97	l. br.	l. br.	1	1
47	16.6	2d yr.	3	1.492	827	191	145	120	118			2	2
48	16.9	2d yr.	4	1.492	806	184	145	122	92	l. br.	gr.	3	1
49	16.7	2d yr.	2	1.605	842	184	147	129	109	br.	g. bl.	2	2
50	16.11	2d yr.	3	1.580	857	185	142	121	117	d. br.	br.	6	2
51	16.1	1	1	1.566	845	186	145	128	109	bla.	d. br.	1	1
52	16.10	2d yr.	3	1.584	845	188	150	134	113	br.	br.	1	1
53	16.4	H. S. S.	1	1.643	899	182	149	127	115	d. br.	gr.	1	2
54	16.7	2d yr.	1	1.524	816	179	140	128	109	br.	bl.	2	2
55	16.11	H. S. S.	2	1.484	790	174	139	120	74	red br.	gr.	1	2
56	16.0	2d yr.	2	1.597	844	181	132	120	97	d. br.	d. br.	1	1
57	16.0	2d yr.	2	1.526	790	183	149	132	99	d. br.	d. br.	1	1
58	16.0	2d yr.	1	1.596	840	181	145	127	114	br.	gr.	1	7
59	16.9	2d yr.	2	1.580	872	183	149	130	111	l. br.	gr.	1	1
60	16.9	2d yr.	1	1.557	835	185	145	127	117	d. blo.	g. bl.	1	1
61	16.3	1st yr.	4	1.600	856	184	141	122	97	l. br.	bl.	1	2
62	16.0	1st yr.	5	1.572	859	184	146	126	111	d. br.	gr.	4	5
63	16.3	1st yr.	1	1.515	806	182	140	122	99	d. br.	br.	2	1
64	16.10	2d yr.	1	1.562	846	188	151	124	111	d. br.	d. br.	2	1
65	16.2	H. S. S.	1	1.653	820	179	143	126	103	br.	gr.	1	3
66	16.8	H. S. S.	2	1.537	832	186	149	122	95	d. br.	br.	3	2
67	16.5	H. S. S.	1	1.725	884	195	152	131	135	d. br.	br.	2	1
68	16.4	H. S. S.	2	1.517	803	172	144	124	96	d. br.	d. br.	2	5
69	16.5	H. S. S.	1	1.674	903	185	142	133	133	br.	g. bl.	1	1
70	16.7	H. S. S.	5	1.519	816	186	144	123	107	d. blo.	g. bl.	1	3
71	16.6	H. S. S.	4	1.627	838	187	147	126	109	br.	gr.	2	1
72	16.3	H. S. S.	7	1.513	843	179	143	130	123	d. br.	d. br.	2	4
73	16.4	H. S. S.	3	1.666	887	190	153	132	117	br.	br.	1	2
74	16.9	7	1	1.454		191	152	123		d. blo.	gr.	2	
75	16.2	H. S. S.	2	1.492	792	177	147	127	102	d. br.	gr.	1	
76	16.4	H. S. S.	2	1.616	807	193	151	131	115	d. br.	d. br.	1	1
77	16.1	H. S. S.	1	1.565	830	188	150	137	111	d. br.	d. br.		
78	16.7	H. S. S.	1	1.563	842	182	153	124	105	d. br.	bl.		
79	16.1	H. S. S.	3	1.579	851	192	151	130	123	d. br.	bl.	2	2
80	16.2	8	8	1.538	817	171	147	127		d. br.	gr.	2	8

## 16-year-old girls. Worcester, Mass.—Continued.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
81.....	16.3	H	3	1,608	868	193	149	132	114	br.	gr.	2	2
82.....	16.6	H	3	1,649	867	181	150	130	110	br.	gr.	.....	.....
83.....	16.0	H	3	1,548	845	184	147	128	112	l. br.	bl.	.....	.....
84.....	16.1	H	3	1,608	855	171	149	125	108	d. br.	gr.	.....	.....
85.....	16.4	H	3	1,550	845	192	148	129	108	br.	gr.	.....	.....
86.....	16.6	.....	1	1,561	.....	175	135	123	.....	br.	gr.	.....	.....
87.....	16.6	.....	2	1,590	.....	187	144	131	.....	d. blo.	bl.	.....	.....
88.....	16.0	.....	.....	1,533	.....	181	146	127	.....	blo.	bl.	.....	.....
89.....	16.7	.....	.....	1,458	.....	181	142	124	.....	d. br.	bl.	.....	.....
90.....	16.2	.....	.....	1,467	.....	186	148	124	.....	d. br.	br.	.....	.....
91.....	16.4	.....	.....	1,478	.....	180	140	121	91	d. br.	br.	.....	.....

## REPEATED MEASUREMENTS.

Number in 15-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.	Number in 15-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.
5.....	15.11	9	1,620	868	430	77	113	24.....	16.6	9	1,550	820	435	75	98
9.....	16.11	9	1,608	850	425	71	116	27.....	16.3	.....	1,604	810	440	76	105
11.....	16.3	8	1,633	868	452	77	127	37.....	16.5	.....	1,584	880	390	81	97
14.....	16.11	9	1,680	895	445	80	133	38.....	16.10	.....	1,601	890	390	73	111
15.....	16.3	9	1,559	845	410	70	96	39.....	16.6	.....	1,528	825	410	69	91
21.....	16.8	9	1,525	830	400	72	114	41.....	16.9	.....	1,639	885	435	73	113
22.....	16.6	.....	1,554	805	420	73	116	44.....	16.1	.....	1,638	845	440	72	113
23.....	16.1	9	1,632	865	445	77	114								

Number in 14-year series.	Age.	Grade.	Stature.	Height sitting.	Forearm.	Breadth of hand.	Weight.
22.....	16.2	9	1,626	875	434	72	133

## ADDITIONAL MEASUREMENTS.

Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.	Forearm.	Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.	Forearm.
25.....	1,626	106	.....	.....	.....	48.....	1,576	95	.....	.....	.....
26.....	1,620	111	.....	.....	.....	49.....	1,600	109	.....	.....	.....
27.....	1,670	107	.....	.....	.....	50.....	1,536	108	.....	.....	.....
28.....	1,684	117	.....	.....	.....	51.....	1,620	114	.....	.....	.....
29.....	1,610	105	.....	.....	.....	52.....	1,562	108	.....	.....	.....
30.....	1,615	105	.....	.....	.....	53.....	1,644	114	.....	.....	.....
31.....	1,556	105	.....	.....	.....	54.....	1,579	101	.....	.....	.....
32.....	1,644	101	.....	.....	.....	55.....	1,472	110	.....	.....	.....
33.....	1,580	114	.....	.....	.....	56.....	1,605	94	.....	.....	.....
34.....	1,536	104	.....	.....	.....	57.....	1,595	107	.....	.....	.....
35.....	1,629	106	.....	.....	.....	58.....	1,639	94	.....	.....	.....
36.....	1,679	108	.....	.....	.....	59.....	1,618	100	.....	.....	.....
37.....	1,684	101	.....	.....	.....	60.....	1,580	97	.....	.....	.....
38.....	1,604	115	.....	.....	.....	61.....	1,582	100	.....	.....	.....
39.....	1,610	111	.....	.....	.....	62.....	1,549	109	.....	.....	.....
40.....	1,678	101	.....	.....	.....	63.....	1,530	108	.....	.....	.....
41.....	1,600	114	.....	.....	.....	64.....	1,535	100	.....	.....	.....
42.....	1,568	109	.....	.....	.....	65.....	1,674	105	.....	.....	.....
43.....	1,624	106	.....	.....	.....	66.....	1,552	101	.....	.....	.....
44.....	1,615	113	.....	.....	.....	67.....	1,759	111	.....	.....	.....
45.....	1,542	103	.....	.....	.....	68.....	1,546	98	.....	.....	.....
46.....	1,522	106	.....	.....	.....	69.....	1,639	118	.....	.....	.....
47.....	1,526	103	.....	.....	.....	70.....	1,566	97	.....	.....	.....

## 16-year-old girls. Worcester, Mass.—Continued.

## ADDITIONAL MEASUREMENTS—Continued.

Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.	Forearm.	Number.	Finger reach.	Height of face (1).	Height of face (2).	Breadth of hand.	Forearm.
71	1,616	101				79	1,610	108			
72	1,548	96				80		100			
73	1,640	114				81	1,594	105	180	77	
74		102	167	70		82	1,651	107			
75	1,476	94				83	1,559				
76	1,642	108				84	1,619	109			
77	1,558	110				85	1,569	104			
78	1,518	117				91		99	158	69	886

## 17-year-old girls. Worcester, Mass.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
1	17.3		1	1,622	880	186	140	126	118	br.	bl.	2	1
2	17.1		2	1,565	851	178	144	127	114	bla.	d. br.	1	2
3	17.6	9	4	1,623	877	183	143	131	121	br.	gr.	2	2
4	17.4	8	2	1,605	899	187	140	121	114	d. br.	gr.	1	1
5	17.5	8	2	1,576	869	182	144	123	111	bl.	bl.	2	2
6	17.4	N	9	1,651	920	188	145	128		br.	gr.	6	2
7	17.8	N	2	1,681	868	176	147	128		bla.	gr.	1	2
8	17.11	N	5	1,568	874	186	148	124		blo.	br.	3	2
9	17.4	N	1	1,580	833	186	146	132		br.	br.	2	2
10	17.2	N	3	1,584	830	187	146	125	105	d. br.	g. br.	1	2
11	17.9	N	7	1,540	870	178	150	131	99	br.	g. bl.	7	2
12	17.0	N	9	1,637	880	184	150	134	118	br.	bl.	2	5
13	17.5	N	1	1,562	862	182	141	124	115	blo.	gr.		
14	17.6	N	2	1,642	882	201	147	134	145	br.	bl.	2	2
15	17.0	N	3	1,611	872	190	147	129	144	blo.	g. bl.	1	3
16	17.7	N	2	1,601	832	178	137	127	118	d. br.	gr.	3	3
17	17.10	N		1,622	866	191	147	125		blo.	g. bl.		
18	17.0	N	3	1,633	881	185	149	129	129	d. br.	gr.	1	1
19	17.7	H	6	1,517	814	187	151	127	103	br.	g. bl.	3	3
20	17.6	H	4	1,637	843	181	141	128	104	d. br.	d. br.		
21	17.7	H	1	1,734	875	188	151	119	133	d. br.	d. br.		
22	17.6	H	1	1,573	818	184	147	131	105	d. br.	l. br.		1
23	17.0	H	1	1,651	855	192	138	125	107	br.	l. br.	1	
24	17.2	Jr.	1	1,539	816	184	145	127	126	d. br.	g. bl.		2
25	17.2	Jr.	1	1,583	840	190	152	129	118	d. br.	bl.	2	1
26	17.5	4 H	9	1,608	875	189	153	125	120	red br.	gr.	1	2
27	17.5	H	2	1,553	843	183	135	116	103	br.	gr.	3	2
28	17.7	H	2	1,648	910	185	147	138	142	br.	g. bl.	2	2
29	17.8	H	2	1,602	873	194	147	127	108	l. br.	g. bl.	1	2
30	17.3	H	2	1,551	824	199	143	128	113	red br.	g. bl.		1
31	17.7	H	2	1,614	832	181	143	127	92	d. br.	l. br.	1	
32	17.11	H	1	1,564	842	184	146	126	109	br.	d. br.	3	
33	17.11	H	1	1,490	809	172	142	121	94	l. br.	g. bl.	1	
34	17.4	H	3	1,580	845	186	151	132	154	d. br.	bl.	3	1
35	17.0	H	1	1,493	813	184	145	121	97	br.	gr.		
36	17.6	H	1	1,575	840	181	146	125	117	d. br.	l. br.	6	
37	17.9	H		1,616	880	181	148	131	128	d. br.	d. br.		2
38	17.5	H	3	1,624	899	188	144	130	134	d. br.	gr.	3	1
39	17.11	H	3	1,636	865	192	142	124	116	br.	br.	1	1
40	17.9	H	1	1,604	884	180	135	121	95	d. br.	d. br.		
41	17.6	H	5	1,623	886	182	142	124	95	d. br.	g. bl.	2	3
42	17.6	H	1	1,530	830	188	154	128	104	d. br.	g. bl.		
43	17.1	H	1	1,530	816	185	146	121	114	d. br.	d. br.		1
44	17.8	H	2	1,727	894	194	139	123	142	br.	bl.	3	
45	17.3	H	1	1,648	826	195	145	132	104	d. blo.	gr.	1	
46	17.8	2d yr.	2	1,655	892	185	146	125	116	br.	g. bl.		1
47	17.0	H	3	1,575	854	184	148	131	119	d. br.	br.	2	1
48	17.1	2d yr.	3	1,528	844	178	144	127	115	d. br.	bl.	3	1
49	17.1	H	1	1,682	876	183	150	128	115	br.	yr.	1	1
50	17.0	2d yr.	1	1,670	896	179	147	126	118	d. br.	yr.		
51	17.5	H	2	1,589	842	180	145	123	101	d. br.	d. br.		
52	17.1	H	6	1,585	816	192	152	125	105	d. br.	yr.	2	2
53	17.0	H	4	1,484	790	174	139	120	74	red br.	yr.	1	2

\* Twin.

## STATISTICS OF GROWTH.

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## 17-year-old girls. Worcester, Mass.—Continued.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
54.....	17.0	2d yr.	2	1,502	794	198	147	128	100	l. br.	g. bl.	.....	1
55.....	17.5	H. S.	2	1,653	883	191	152	130	136	br.	d. br.	1	2
56.....	17.7	2d gr.	5	1,472	812	186	151	131	115	d. br.	br.	3	3
57.....	17.8	H. S.	3	1,522	846	178	142	128	107	d. br.	g. g. bl.	3	1
58.....	17.1	2d gr.	3	1,592	835	181	140	123	114	br.	g. g. bl.	1	1
59.....	17.0	H. S.	2	1,540	839	179	147	127	111	br.	bl.	1	1
60.....	17.4	2d gr.	2	1,563	876	180	146	128	127	d. br.	d. br.	.....	3
61.....	17.1	1st gr.	2	1,587	853	185	150	130	133	br.	g. bl.	1	1
62.....	17.6	H. S.	1	1,578	850	189	140	123	107	l. br.	d. br.	.....	.....
63.....	17.2	H. S.	1	1,575	842	193	147	126	112	d. br.	d. br.	.....	.....
64.....	17.8	H. S.	2	1,576	837	180	148	131	110	br.	bl.	4	3
65.....	17.11	H. S.	1	1,633	862	183	142	125	121	br.	bl.	2	1
66.....	17.7	H. S.	3	1,604	842	183	140	129	123	red br.	l. br.	2	2
67.....	17.2	H. S.	1	1,586	843	185	138	124	108	d. br.	g. bl.	.....	.....
68.....	17.3	H. S.	4	1,488	803	173	142	129	97	d. br.	bl.	3	1
69.....	17.6	H. S.	5	1,610	845	188	143	117	100	d. br.	bl.	1	2

\* Stepbrother.

## ADDITIONAL MEASUREMENTS.

Number.	Finger reach.	Height of face (1).	Height of face (2).	Number.	Finger reach.	Height of face (1).	Height of face (2).	Number.	Finger reach.	Height of face (1).	Height of face (2).
7.....	1,682	97	.....	28.....	1,649	102	.....	49.....	1,752	109	.....
8.....	1,509	110	.....	29.....	1,565	113	.....	50.....	1,713	108	.....
9.....	1,568	101	.....	30.....	1,615	110	.....	51.....	1,547	105	.....
10.....	1,682	112	.....	31.....	1,611	106	.....	52.....	1,905	107	.....
11.....	1,525	106	.....	32.....	1,591	119	.....	53.....	1,472	110	.....
12.....	1,636	116	.....	33.....	1,499	109	.....	54.....	1,512	107	.....
13.....	1,531	109	.....	34.....	1,574	108	.....	55.....	1,903	108	.....
14.....	1,622	116	.....	35.....	1,436	113	.....	56.....	1,434	102	.....
15.....	1,619	107	.....	36.....	1,625	112	.....	57.....	1,560	110	.....
16.....	1,617	111	.....	37.....	1,622	116	.....	58.....	1,633	98	.....
17.....	1,694	70	111	38.....	1,672	114	.....	59.....	1,648	106	.....
18.....	1,642	104	.....	39.....	1,630	110	.....	60.....	1,564	110	.....
19.....	1,549	107	.....	40.....	1,562	104	.....	61.....	1,538	103	.....
20.....	1,695	114	.....	41.....	1,544	116	.....	62.....	1,527	110	.....
21.....	1,790	108	.....	42.....	1,555	102	.....	63.....	1,618	111	.....
22.....	1,613	104	.....	43.....	1,540	104	.....	64.....	1,610	108	.....
23.....	1,713	108	.....	44.....	1,753	114	.....	65.....	1,612	98	.....
24.....	1,540	105	.....	45.....	1,642	97	.....	66.....	1,908	105	.....
25.....	1,599	111	.....	46.....	1,659	110	.....	67.....	1,555	104	.....
26.....	1,673	114	.....	47.....	1,624	108	.....	68.....	1,490	111	.....
27.....	1,570	98	.....	48.....	1,535	108	.....	69.....	1,660	104	.....

## 18-year-old girls. Worcester, Mass.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
1.....	18.8	N. S. *	1	1,623	846	191	145	129	.....	red.	g. bl.	.....	1
2.....	18.1	N. S. *	5	1,729	908	186	155	134	.....	br.	g. bl.	3	4
3.....	18.11	N. S. *	1	1,637	884	191	150	132	.....	br.	br.	.....	4
4.....	18.2	N. S. *	1	1,663	863	180	147	129	.....	br.	g. br.	.....	2
5.....	18.9	N. S. *	1	1,630	901	184	145	124	.....	br.	g. bl.	.....	.....
6.....	18.6	N. S. *	4	1,622	887	186	145	124	.....	br.	bl.	2	2
7.....	18.0	N. S. *	9	1,544	815	183	140	120	.....	l. br.	bl.	4	5
8.....	18.1	N. S. *	7	1,598	870	187	148	130	.....	d. br.	d. br.	2	2
9.....	18.7	N. S. *	8	1,628	841	191	146	130	.....	br.	bl.	2	2
10.....	18.8	N. S. *	6	1,665	863	179	138	125	.....	red.	bl.	4	2

\* Normal School.



## 18-year-old girls. Worcester, Mass.—Continued.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
11.	18.9	N	2	1,065	842	179	146	131	-----	bla.	gr.	1	2
12.	18.9	N	1	1,058	908	185	141	130	-----	red.	bl.	3	3
13.	18.9	N	2	1,067	881	188	144	124	100	d. br.	bl.	-----	-----
14.	18.9	N	2	1,503	820	181	140	118	94	red.	gr.	2	2
15.	18.10	N	2	1,503	849	180	150	125	112	br.	bl.	-----	-----
16.	18.4	N	4	1,578	873	192	142	121	108	br.	gr.	3	-----
17.	18.0	N	3	1,572	890	178	145	129	140	br.	bl.	-----	-----
18.	18.0	N	3	1,502	814	171	152	133	111	red.	bl.	2	1
19.	18.0	N	3	1,022	876	187	144	132	119	-----	-----	2	1
20.	18.9	N	3	1,067	903	191	150	126	115	blo.	br.	-----	-----
21.	18.5	N	3	1,561	873	187	146	138	154	d. br.	br.	6	4
22.	18.6	N	4	1,562	851	190	150	130	115	br.	bl.	-----	-----
23.	18.2	N	4	1,534	856	186	148	128	111	br.	g. bl.	1	2
24.	18.3	-----	-----	1,615	880	187	140	130	127	br.	bl.	-----	-----
25.	18.4	-----	-----	1,550	836	184	155	131	113	blo.	bl.	3	1
26.	18.7	N	2	1,575	848	189	144	128	119	d. br.	g. bl.	2	2
27.	18.5	N	3	1,542	814	180	140	125	113	blo.	bl.	5	4
28.	18.6	N	3	1,002	844	184	146	130	125	br.	br.	-----	-----
29.	18.8	N	3	1,536	816	195	150	142	148	d. br.	br.	4	2
30.	18.7	H	3	1,547	803	178	138	127	117	d. br.	gr.	-----	-----
31.	18.1	H	2	1,045	845	190	145	126	127	br.	gr.	1	1
32.	18.0	H	1	1,511	806	188	148	131	100	d. br.	g. bl.	-----	-----
33.	18.1	H	2	1,065	890	194	147	126	113	red br.	g. bl.	-----	-----
34.	18.9	H	2	1,076	876	192	152	137	141	br.	bl.	2	1
35.	18.1	H	3	1,555	862	184	148	128	113	br.	bl.	1	1
36.	18.8	Sen.	2	1,588	872	192	180	137	128	l. br.	br.	-----	-----
37.	18.4	H	1	1,067	827	193	152	132	140	l. br.	d. br.	1	4
38.	18.4	H	3	1,007	863	186	146	125	129	bla.	br.	1	-----
39.	18.1	H	3	1,374	842	182	144	124	111	blo.	gr.	-----	2
40.	18.3	H	1	1,510	853	182	148	130	101	d. br.	bl.	-----	-----
41.	18.0	H	2	1,563	853	190	152	131	110	br.	br.	2	1
42.	18.7	H	2	1,640	930	187	151	135	135	br.	br.	-----	-----
43.	18.4	H	5	1,012	862	186	148	130	125	br.	l. br.	2	5
44.	18.3	H	2	1,548	819	183	152	129	104	d. br.	bl.	-----	-----
45.	18.4	H	1	1,003	873	190	148	131	128	br.	gr.	5	-----
46.	18.7	2d. yr.	3	1,540	815	184	145	130	119	l. br.	gr.	-----	2
47.	18.4	2d. yr.	3	1,649	890	190	155	130	130	l. br.	g. bl.	2	1
48.	18.2	H	2	1,562	844	184	149	129	119	d. br.	bl.	2	3
49.	18.3	8	1	1,496	802	180	144	125	-----	d. br.	gr.	1	3

## ADDITIONAL MEASUREMENTS.

Number.	Finger reach.	Height of face (1).	Height of face (2).	Number.	Finger reach.	Height of face (1).	Height of face (2).	Number.	Finger reach.	Height of face (1).	Height of face (2).
2.	1,746	112	-----	22.	1,610	110	-----	36.	1,597	116	-----
3.	1,613	116	-----	23.	1,525	112	-----	37.	1,577	101	-----
4.	1,707	-----	-----	24.	1,545	100	-----	38.	1,597	106	-----
10.	1,640	109	-----	25.	1,594	106	-----	39.	1,605	109	-----
11.	1,685	106	-----	26.	1,606	110	-----	40.	1,477	100	-----
13.	1,699	114	-----	27.	1,563	118	-----	41.	1,557	108	-----
14.	1,562	104	-----	28.	1,636	106	-----	42.	1,670	112	-----
15.	1,593	110	-----	29.	1,754	118	-----	43.	1,641	98	-----
16.	1,574	113	-----	30.	1,590	104	-----	44.	1,614	110	-----
17.	1,600	109	-----	31.	1,710	111	-----	45.	1,588	105	-----
18.	1,596	101	-----	32.	1,535	100	-----	46.	1,551	109	-----
19.	1,622	108	-----	33.	1,656	108	-----	47.	1,652	117	-----
20.	1,605	105	-----	34.	1,720	98	-----	48.	1,608	103	-----
21.	1,585	110	-----	35.	1,500	109	-----	49.	-----	-----	153

## 19-year-old girls. Worcester, Mass.

Number.	Age.	Grade.	Child.	Stature.	Height standing.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
1	19.0	N. 8.		1,543	830	185	147	130		blo.	g. bl.		
2	19.6	N. 9.		1,567	848	193	143	131		blo.	g. bl.		
3	19.0	N. 9.		1,497	810	186	145	125		blo.	g. bl.		
4	19.0	N. 9.		1,560	815	190	145	126		blo.	g. bl.		
5	19.7	N. 9.		1,506		186	141	121		gold.	g. bl.		
6	19.6	N. 9.	4	1,566	850	175	141	125	100	d. br.	gr.	1	3
7	19.6	N. 9.	4	1,519	828	182	142	128		bia.	br.	1	3
8	19.1	N. 9.	4	1,619	836	185	151	130		ed.	br.	1	3
9	19.5	N. 9.	4	1,583	863	179	146	126		or.	l. br.	1	3
10	19.4	N. 9.	4	1,675	871	182	156	136		d. br.	g. br.	1	3
11	19.4	N. 9.	6	1,532	831	177	151	128		br.	gr.	5	5
12	19.11	N. 9.	4	1,617	871	189	141	131		br.	gr.	5	5
13	19.6	N. 9.	4	1,586	845	191	147	133		l. br.	bl.	1	3
14	19.4	N. 9.	4	1,725	829	183	153	136		br.	bl.	1	3
15	19.4	N. 9.	6	1,629	890	167	144	125		br.	bl.	4	4
16	19.10	N. 9.	1	1,638	854	182	142	132		br.	g. bl.	2	2
17	19.8	N. 9.	3	1,565	848	174	143	132		l. br.	gr.	3	3
18	19.2	N. 9.	4	1,603	843	181	150	129		br.	gr.	4	4
19	19.5	N. 9.	4	1,529	786	183	146	130		d. br.	bl.	1	1
20	19.9	N. 9.	1	1,561	831	190	151	134		d. br.	d. br.	1	1
21	19.6	N. 9.	3	1,596	856	176	136	119		br.	br.	1	3
22	19.8	N. 9.	1	1,476	803	181	144	122		blo.	bl.	3	3
23	19.5	N. 9.	7	1,591	823	176	144	129		d. br.	g. bl.	3	3
24	19.3	N. 9.	4	1,558	832	181	145	126		d. br.	d. br.	4	4
25	19.3	N. 9.	1	1,532	830	178	140	126		blo.	g. bl.	4	4
26	19.6	N. 9.	1	1,596	841	177	147	128		d. br.	g. bl.	3	3
27	19.9	N. 9.	6	1,649	850	180	141	130		blo.	gr.	4	4
28	19.9	N. 9.	1	1,602	868	182	149	129		blo.	bl.	1	1
29	19.6	N. 9.	2	1,517	796	179	146	125		br.	gr.	1	1
30	19.5	N. 9.	4	1,467	826	182	144	127		br.	g. bl.	1	1
31	19.5	N. 9.	4	1,617	874	182	144	126	110	blo.	bl.	1	1
32	19.2	N. 9.	7	1,549	863	185	153	134	120	blo.	bl.	2	2
33	19.7	N. 9.	3	1,664	823	180	152	134	121	r. br.	gr.	2	5
34	19.3	N. 9.	3	1,694	844	181	145	127	137	rd.	g. bl.	5	5
35	19.2	N. 9.	4	1,583	884	189	148	131	126	l. br.	bl.	1	1
36	19.11	N. 9.	1	1,600	871	187	144	127	114	l. br.	bl.	1	1
37	19.1	N. 9.	1	1,597	848	176	157	136	118	br.	d. br.	1	1
38	19.0	N. 9.	3	1,616	870	185	142	125	110	br.	l. br.	1	1
39	19.0	N. 9.	3	1,598	865	183	137	123	117	d. br.	g. bl.	3	3
40	19.1	N. 9.	2	1,559	841	184	145	124	132	br.	g. bl.	2	2
41	19.11	N. 9.	2	1,627	893	182	152	137	124	br.	br.	1	1
42	19.6	N. 9.	1	1,648	892	192	145	128	122	br.	d. br.	1	1
43	19.6	N. 9.	1	1,550	827	187	145	127	100	d. br.	d. br.	2	2
44	19.0	N. 9.	6	1,585	824	190	144	124	107	br.	br.	1	1
45	19.6	N. 9.	6	1,522	840	188	141	126	108	br.	d. br.	1	1
46	19.0	N. 9.	6	1,559	850	173	143	123	110	br.	bl.	3	3
47	19.6	N. 9.		1,566	857	188	141	125	106	br.	br.	3	2

## ADDITIONAL MEASUREMENTS.

Number.	Finger reach.	Height of face (1).	Height of face (2).	Number.	Finger reach.	Height of face (1).	Height of face (2).	Number.	Finger reach.	Height of face (1).	Height of face (2).
1	1,563	65	103	28	1,555	103		39	1,592	106	
2	1,579	66	104	31	1,557	105		40	1,590	110	
3	1,511	110		32	1,544	108		41	1,641	107	
4	1,569	114		33	1,692	113		42	1,668	110	
5	1,520	109		34	1,597	115		43	1,627	106	
9	1,616	112		35	1,600	108		44	1,624	108	
12	1,634	117		36	1,572	120		45	1,512	102	
18	1,635	109		37	1,644	117		46	1,590	106	
25	1,541	110		38	1,619	106		47	1,531	104	

## 20-year-old girls. Worcester, Mass.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
1	20.0	N.N.		1,698	881	184	150	132		l. br.	l. br.		
2	20.11	N.N.		1,569	834	192	145	123		blo.	g. bl.		
3	20.0	N.N.		1,612	856	195	142	127		br.	bl.		
4	20.5	N.N.		1,507	832	185	149	131		l. br.	bl.		
5	20.9	N.N.		1,559	870	189	146	124		br.	g. bl.		
6	20.0	N.N.		1,513		189	150	125		br.	g. bl.		
7	20.6	N.N.		1,617		187	146	126		br.	g. bl.		
8	20.4	N.N.		1,594	846	186	142	118		br.	g. bl.		
9	20.11	N.N.		1,512	829	189	152	134		br.	g. bl.		
10	20.9	N.N.		1,564	834	188	141	128		br.	g. bl.		
11	20.8	N.N.	1	1,546	831	181	142	123		d. br.	br.	1	1
12	20.2	N.N.	6	1,580	820	179	149	127		d. br.	gr.	2	5
13	20.0	N.N.	1	1,496	820	170	146	123		br.	br.	2	2
14	20.0	N.N.	8	1,554	857	181	144	131		d. br.	br.	5	2
15	20.1	N.N.	4	1,685	900	184	151	131		red.	bl.	3	3
16	20.3	N.N.	3	1,503	800	170	141	127		d. br.	gr.	2	2
17	20.2	N.N.	2	1,578	860	183	152	137		d. br.	g. bl.	4	4
18	20.11	N.N.	1	1,698	854	193	152	138		br.	br.	1	1
19	20.4	N.N.	7	1,535	822	179	146	125		rd. br.	bl.	3	3
20	20.4	N.N.	1	1,607	858	181	157	135		l. br.	bl.	1	3
21	20.5	N.N.	3	1,565	833	185	141	127		br.	g. bl.	1	1
22	20.6	N.N.	1	1,479	806	173	137	126		d. br.	bl.		
23	20.11	N.N.	2	1,637	877	187	141	127		d. br.	br.	5	4
24	20.1	N.N.	1	1,616	878	208	158	142		br.	g. bl.	2	2
25	20.5	N.N.	3	1,661	893	198	144	128		br.	br.	3	3
26	20.10	N.N.	4	1,550	836	180	150	129		blo.	bl.	4	2
27	20.0	N.N.	6	1,625	871	188	152	133		d. br.	br.	2	5
28	20.10	N.N.	2	1,629	844	184	139	126	116	l. br.	br.	3	1
29	20.9	N.N.	3	1,550	892	176	146	128	119	rd. br.	l. br.	5	2
30	20.0	N.N.	9	1,453	828	190	149	128	117	br.	g. bl.	5	4
31	20.8	N.N.	3	1,593	826	196	144	131	113	br.	br.		
32	20.2	N.N.	9	1,544	845	186	150	131	131	blo.	bl.	4	3
33	20.0	N.N.	3	1,596	879	190	153	129	123	br.	gr.	4	1
34	20.9	N.N.	2	1,547	842	183	145	121	111	blo.	g. bl.	1	
35	20.1	N.N.	4	1,643	873	184	142	131	127	br.	bl.	2	3
36	20.0	H. S.	1	1,563	843	183	150	132	111	bla.	gr.		3
37	20.1	H. S.	2	1,466	829	180	141	123	96	br.	d. br.		3

\* Three stepbrothers.

\* Stepsisters.

## ADDITIONAL MEASUREMENTS.

Number.	Finger reach.	Height of face (1).	Height of face (2).	Number.	Finger reach.	Height of face (1).	Height of face (2).	Number.	Finger reach.	Height of face (1).	Height of face (2).
1	1,722	89	108	10	1,537	115		31	1,598	100	
2	1,610	114		13	1,434	104		32	1,534	101	
3	1,596	111		14	1,560	102		33	1,616	111	
4	1,522	106		15	1,660	109		34	1,568	101	
5	1,555	75	122	20	1,631	106		35	1,673	111	
6	1,478	97		26	1,430	113		36	1,558	109	
7	1,616	115		28	1,770	113		37	1,463	94	
8	1,671	109		29	1,520	110					
9	1,583	108		30	1,463	105					

# STATISTICS OF GROWTH.

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## 21-year-old girls. Worcester, Mass.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
1.....	21.0	N	.....	1,630	817	184	140	121	.....	l. br.	g. bl.	.....	.....
2.....	21.3	N	.....	1,650	865	187	143	123	.....	l. br.	g. bl.	.....	.....
3.....	21.10	N	.....	1,614	.....	181	147	.....	.....	br.	g. bl.	.....	.....
4.....	21.7	N	.....	1,563	845	182	144	122	.....	br.	g. bl.	.....	.....
5.....	21.4	N	.....	1,537	846	182	145	125	.....	d. br.	g. bl.	.....	.....
6.....	21.5	N	.....	1,663	881	183	145	133	.....	d. blo.	g. bl.	5	3
7.....	21.0	N	.....	1,572	863	183	148	125	.....	d. br.	br.	.....	.....
8.....	21.0	N	.....	1,667	872	191	148	133	.....	br.	br.	.....	1
9.....	21.8	N	.....	1,606	843	186	156	134	.....	blo.	bl.	.....	.....
10.....	21.2	N	.....	1,618	868	188	146	126	.....	l. br.	bl.	4	3
11.....	21.11	N	.....	1,603	864	182	142	133	.....	br.	bl.	.....	.....
12.....	21.1	N	.....	1,588	863	186	145	131	122	d. br.	g. bl.	3	.....
13.....	21.3	N	.....	1,566	846	177	139	123	104	br.	bl.	1	.....
14.....	21.8	N	.....	1,623	864	178	140	130	102	br.	bl.	1	.....
15.....	21.9	N	.....	1,505	822	190	145	125	112	br.	bl.	.....	.....
16.....	21.0	N	.....	1,615	874	184	146	131	106	d. br.	br.	3	.....

## ADDITIONAL MEASUREMENTS.

Number.	Finger reach.	Height of face (1).	Height of face (2).	Number.	Finger reach.	Height of face (1).	Height of face (2).	Number.	Finger reach.	Height of face (1).	Height of face (2).
1.....	1,620	116	.....	10.....	1,642	102	.....	15.....	1,581	110	.....
2.....	1,637	99	67	12.....	1,593	100	.....	16.....	1,623	101	.....
3.....	1,601	105	.....	13.....	1,607	107	.....				
4.....	1,567	118	.....	14.....	1,588	118	.....				

## 22-year-old girls. Worcester, Mass.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
1.....	22.0	N	.....	1,664	887	196	146	128	.....	blo.	g. bl.	.....	.....
2.....	22.0	N	.....	1,650	877	191	145	121	.....	blo.	g. bl.	.....	.....
3.....	22.0	N	.....	1,545	832	180	134	118	.....	l. br.	g. bl.	.....	.....
4.....	22.0	N	.....	1,621	864	180	144	132	.....	blo.	g. bl.	.....	.....
5.....	22.6	N	.....	1,503	833	183	149	132	.....	blo.	g. bl.	.....	.....
6.....	22.2	N	.....	1,612	879	183	150	136	.....	bla.	br.	.....	.....
7.....	22.2	N	.....	1,620	897	179	147	124	.....	l. br.	br.	.....	1
8.....	22.0	N	.....	1,542	828	187	146	133	.....	br.	bl.	.....	6
9.....	22.0	N	.....	1,577	857	190	142	123	.....	l. br.	g. bl.	5	1
10.....	22.6	N	.....	1,668	890	181	149	134	.....	d. br.	g. bl.	1	1
11.....	22.3	N	.....	1,554	855	189	139	123	.....	d. br.	d. br.	1	1
12.....	22.9	N	.....	1,569	842	185	140	124	111	br.	bl.	5	3
13.....	22.5	N	.....	1,648	897	201	144	134	133	blo.	br.	3	.....
14.....	22.9	N	.....	1,652	863	186	143	132	129	blo.	g. bl.	.....	.....
15.....	22.0	N	.....	1,594	858	183	140	125	96	d. br.	br.	2	3
16.....	22.9	N	.....	1,506	831	186	150	130	102	d. br.	d. br.	1	1

## 22-year-old girls. Worcester, Mass.—Continued.

## ADDITIONAL MEASUREMENTS.

Number.	Finger reach.	Height of face (1).	Height of face (2).	Number.	Finger reach.	Height of face (1).	Height of face (2).	Number.	Finger reach.	Height of face (1).	Height of face (2).
1.....		118		6.....	1,659	99	107	14.....	1,714	115	
2.....	1,664	105		7.....	1,610	107		15.....	1,805	107	
3.....	1,663	98	99	9.....	1,580	106		16.....	1,552	109	
4.....	1,667	107		12.....	1,546	110					
5.....	1,520	70	109	13.....	1,645	118					

## 23-year-old girls. Worcester, Mass.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Breadth of face.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
1.....	23.6	N. S.		1,540	841	179	138	126		br.	g. bl.		
2.....	23.5	N. S.	8	1,612	878	188	151	130		br.	br.	5	3
3.....	23.5	N. S.	8	1,584	861	191	151	135		br. g.	br.		
4.....	23.4	N. S.	8	1,602	843	184	145	132	138	br. g.	g. bl.	3	5
5.....	23.8	N. S.	1	1,625	901	188	143	128	127	d. br.	g. br.	1	
6.....	23.8		7	1,645	880	180	154	131	126	d. br.	g. bl.	7	3

## ADDITIONAL MEASUREMENTS.

Number.	Finger reach.	Height of face.	Number.	Finger reach.	Height of face.
1.....	1,520	103	5.....	1,614	112
3.....	1,636	102	6.....	1,656	106
4.....	1,645	109			

## 24-year-old girls. Worcester, Mass.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Height of forehead.	Breadth of face.	Finger reach.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
1.....	24.9	N. S.	3	1,539	832	189	138		125			br.	br.	2	1
2.....	24.0	N. S.	3	1,522	839	187	143	102	123	1,581	119	br.	bl.	2	2

## 25-year-old girls. Worcester, Mass.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Height of forehead.	Breadth of face.	Finger reach.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
1.....	25.7	N. S.	5	1,645	896	193	140	110	130	1,637		br.	g. br.	2	4
2.....	25.8	N. S.	2	1,527	830	181	140	108	125			br.	br.	2	

## 26-year-old girls. Worcester, Mass.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Height of forehead.	Breadth of face.	Finger reach.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
1.....	26.4	N. S.	9	1,606	894	193	150	113	123	1,608	132	.....	.....	4	4
2.....	26.7	N. S.	.....	1,663	913	190	150	108	134	1,617	.....	br.	g. bl.	.....	.....

## 27 to 35 year old girls.

Number.	Age.	Grade.	Child.	Stature.	Height sitting.	Length of head.	Breadth of head.	Height of forehead (1).	Height of forehead (2).	Breadth of face.	Finger reach.	Weight.	Hair.	Eyes.	Brothers.	Sisters.
1.....	27.5	.....	10	1,591	811	191	147	105	.....	129	1,611	104	d. br.	bl.	6	4
1.....	29.2	.....	2	1,498	780	188	150	68	106	130	.....	101	br.	gr.	.....	.....
1.....	30.0	N. S.	.....	1,661	898	184	150	77	115	129	.....	.....	br. gr.	g. br.	.....	1
2.....	30.7	N. S.	.....	1,626	878	183	149	120	.....	127	1,634	.....	br.	g. bl.	.....	.....
3.....	30.5	.....	.....	1,568	834	180	152	114	.....	130	1,584	128	d. br.	g. br.	.....	.....
1.....	32.3	.....	2	1,584	866	188	148	112	.....	134	1,663	149	d. br.	l. br.	1	.....
1.....	35.0	.....	.....	1,625	.....	184	151	107	.....	135	1,580	.....	l. br.	g. bl.	.....	.....

## Table of relationship.

## BOYS.

Age.	No.	Relationship.	Age.	No.	Relationship.
		<i>Son of—</i>			<i>Brother of—</i>
3-year.....	1	29-year woman, No. 1.	8-year.....	1	11-year girl, No. 29.
		<i>Brother of—</i>		(8)	7-year boy, No. 31.
4-year.....	1	6-year boy, No. 83.		17	14-year girl, No. 9.
5-year.....	11	13-year boy, No. 78.		18	14-year girl, No. 3.
	12	8-year boy, No. 70; 11-year girl, No. 82; 12-year girl, No. 85.		22	8-year boy, No. 28.
	13	10-year girl, No. 79; 12-year boy, No. 109.		(28)	8-year boy, No. 22.
	15	10-year girl, No. 96; 10-year boy, No. 95.		(48)	6-year boy, No. 31; 10-year girl, No. 43.
6-year.....	18	12-year girl, No. 108.		59	6-year girl, No. 45; 12-year boy, No. 79.
	17	7-year girl, No. 9.		60	10-year boy, No. 65.
	26	12-year girl, No. 29; 17-year girl, No. 2.		63	14-year girl, No. 52.
	31	8-year boy, No. 48; 10-year girl, No. 43.		(70)	5-year boy, No. 12; 11-year girl, No. 82; 12-year girl, No. 85.
	44	11-year girl, No. 57.		80	5-year girl, No. 25.
	46	8-year girl, No. 57.		(82)	6-year boy, No. 57.
	57	8-year boy, No. 82.		94	10-year girl, No. 106.
	59	7-year boy, No. 94.		95	14-year boy, No. 84.
	60	11-year boy, No. 91.		(96)	6-year boy, No. 81.
	77	8-year girl, No. 83.		101	10-year boy, No. 116.
	78	9-year girl, No. 69; 18-year boy, No. 126.	9-year.....	105	6-year girl, No. 61.
	81	8-year boy, No. 96.		1	11-year girl, No. 89.
	(88)	4-year boy, No. 1.		3	11-year girl, No. 70; 14-year girl, No. 56.
7-year.....	14	9-year boy, No. 22.		4	12-year girl, No. 15; 17-year girl, No. 1.
	80	5-year girl, No. 9.		12	9-year boy, No. 13.
	31	8-year boy, No. 8.		(13)	9-year boy, No. 12.
	49	16-year boy, No. 16.		15	14-year girl, No. 24.
	51	13-year boy, No. 42.		(22)	7-year boy, No. 14.
	58	9-year girl, No. 38.		26	5-year girl, No. 4; 11-year boy, No. 19.
	61	11-year girl, No. 54.		38	7-year girl, No. 19; 11-year boy, No. 5.
	67	10-year boy, No. 108.		41	14-year boy, No. 9; 16-year girl, No. 8.
	70	5-year girl, No. 19.		47	7-year girl, No. 21; 12-year boy, No. 41; 12-year boy, No. 29.
	98	6-year girl, No. 59; 8-year girl, No. 70.		49	12-year boy, No. 46.
	(94)	6-year boy, No. 59.			
	97	10-year boy, No. 110.			

## Table of relationship—Continued.

## BOYS—Continued.

Age.	No.	Relationship.	Age.	No.	Relationship.
		<i>Brother of—</i>			<i>Brother of—</i>
9-year	52	10-year boy, No. 45; 18-year girl, No. 31.	12-year	(58)	10-year boy, No. 52.
	60	6-year girl, No. 23.		(62)	9-year boy, No. 82.
	82	12-year boy, No. 62.		(79)	6-year girl, No. 36; 8-year boy, No. 59.
	88	13-year boy, No. 68.		(82)	11-year boy, No. 59.
	98	11-year boy, No. 73.		86	10-year girl, No. 50.
	101	5-year girl, No. 29; 9-year boy, No. 103; 12-year girl, No. 105.		95	7-year girl, No. 54; 9-year girl, No. 54.
	(108)	5-year girl, No. 29; 9-year boy, No. 101; 12-year girl, No. 105.		104	9-year girl, No. 71; 14-year girl, No. 80; 16-year girl, No. 17.
	108	14-year boy, No. 73.		(109)	5-year boy, No. 13; 10-year girl, No. 79.
	117	6-year girl, No. 50; 7-year girl, No. 57.		(110)	10-year boy, No. 108.
	118	11-year girl, No. 103.		112	10-year girl, No. 81.
	119	6-year girl, No. 48.		115	14-year girl, No. 65.
	124	11-year girl, No. 90; 14-year boy, No. 91.		(118)	10-year boy, No. 97.
	126	7-year girl, No. 74.		123	14-year girl, No. 87.
	131	14-year boy, No. 24.		126	15-year boy, No. 52.
10-year	1	12-year girl, No. 8.	13-year	131	13-year girl, No. 83.
	2	6-year girl, No. 5; 8-year girl, No. 2; 12-year girl, No. 6.		147	10-year girl, No. 110; 17-year boy, No. 13.
	7	12-year boy, No. 5.		6	11-year girl, No. 8.
	27	8-year girl, No. 18.		(29)	7-year girl, No. 21; 9-year boy, No. 47; 12-year boy, No. 41.
	39	8-year girl, No. 19.		(30)	11-year boy, No. 30.
	(45)	9-year boy, No. 52; 18-year girl, No. 31.		(42)	7-year boy, No. 51.
	52	12-year boy, No. 53.		45	15-year boy, No. 23.
	(65)	8-year boy, No. 60.		47	9-year girl, No. 32; 12-year girl, No. 52.
	73	13-year girl, No. 54.		55	12-year girl, No. 59; 15-year boy, No. 85.
	77	14-year boy, No. 51.		(68)	9-year boy, No. 88.
	83	8-year girl, No. 59.		(78)	5-year boy, No. 11.
	86	13-year girl, No. 68; 14-year girl, No. 61.		(85)	9-year girl, No. 79; 11-year boy, No. 90.
	(95)	5-year boy, No. 15; 10-year girl, No. 98.		(107)	11-year boy, No. 95.
	97	12-year boy, No. 118.		(126)	6-year boy, No. 78; 9-year girl, No. 69.
	(103)	7-year boy, No. 67.	14-year	(9)	9-year boy, No. 41; 16-year girl, No. 8.
	107	13-year girl, No. 79.		(20)	12-year boy, No. 83.
	108	12-year boy, No. 110.		(24)	9-year boy, No. 131.
	(110)	7-year boy, No. 97.		(34)	8-year boy, No. 95.
	(116)	8-year boy, No. 101.		48	12-year girl, No. 65.
	121	14-year girl, No. 82.		(51)	10-year boy, No. 77.
	122	8-year girl, No. 80.		(55)	8-year girl, No. 48; 11-year boy, No. 87.
11-year	5	7-year girl, No. 19; 9-year boy, No. 38.		(58)	11-year boy, No. 68.
	19	5-year girl, No. 4; 9-year boy, No. 26.		65	13-year girl, No. 100.
	30	13-year boy, No. 30.		(73)	9-year boy, No. 108.
	37	9-year girl, No. 24.		(91)	9-year boy, No. 124; 11-year girl, No. 90.
	41	6-year girl, No. 27; 9-year girl, No. 42; 10-year girl, No. 45; 12-year girl, No. 55.	15-year	12	15-year girl, No. 6.
	57	8-year girl, No. 46; 14-year boy, No. 55.		13	10-year girl, No. 10; 16-year boy, No. 6.
	59	12-year boy, No. 82.		(23)	13-year boy, No. 45.
	68	14-year boy, No. 53.		(35)	12-year girl, No. 59; 13-year boy, No. 55.
	(73)	9-year boy, No. 98.		(52)	12-year boy, No. 126.
	88	11-year girl, No. 101.		67	17-year boy, No. 8.
	90	9-year girl, No. 79; 13-year boy, No. 85.	16-year	74	17-year boy, No. 14.
	(91)	6-year boy, No. 60.		(6)	10-year girl, No. 10; 15-year boy, No. 13.
	95	13-year boy, No. 107.		7	12-year girl, No. 27; 14-year girl, No. 12.
12-year	1	8-year girl, No. 5.		8	10-year girl, No. 6; 13-year girl, No. 19.
	(5)	10-year boy, No. 7.		(16)	7-year boy, No. 49.
	25	11-year girl, No. 18.		(8)	15-year boy, No. 67.
	33	14-year boy, No. 20.		(13)	10-year girl, No. 110; 12-year boy, No. 147.
	(41)	7-year girl, No. 21; 9-year boy, No. 47; 13-year boy, No. 29.	17-year	(14)	15-year boy, No. 74.
	(46)	9-year boy, No. 49.	21-year	1	20-year boy, No. 2.
	57	10-year girl, No. 44.	26-year	(2)	21-year boy, No. 1.

Table of relationship—Continued.

## GIRLS.

Age.	No.	Relationship.	Age.	No.	Relationship.
		<i>Sister of—</i>			<i>Sister of—</i>
5-year -----	1 (4) (9) 15 (19) (25) (29)	8-year girl, No. 15. 9-year boy, No. 26; 11-year boy, No. 19. 7-year boy, No. 30. 7-year girl, No. 40. 7-year boy, No. 70. 8-year boy, No. 80. 9-year boys, Nos. 101, 108; 12-year girl, No. 106.	9-year -----	(71) (77) (79)	12-year boy, No. 104; 14-year girl, No. 80; 16-year girl, No. 17. 6-year girl, No. 56; 10-year girl, No. 92. 11-year boy, No. 90; 13-year boy, No. 85.
6-year -----	(5) (23) (27) (36) (48) (50) 56 (59) (61) (9) (19) (21) (40) (54) (57) 60 61 65	8-year girl, No. 2; 10-year boy, No. 2; 12-year girl, No. 6. 9-year boy, No. 60. 9-year girl, No. 42; 10-year girl, No. 45; 11-year boy, No. 41; 12-year girl, No. 55. 8-year boy, No. 59; 12-year boy, No. 79. 9-year boy, No. 119. 7-year girl, No. 57; 9-year boy, No. 117. 9-year girl, No. 77; 10-year girl, No. 92. 7-year boy, No. 93; 8-year girl, No. 70. 8-year boy, No. 105. 6-year boy, No. 17. 9-year boy, No. 38; 11-year boy, No. 5. 9-year boy, No. 47; 12-year boy, No. 41; 13-year boy, No. 29. 5-year girl, No. 15. 9-year girl, No. 54; 12-year boy, No. 95. 6-year girl, No. 50; 9-year boy, No. 117. 11-year girl, No. 106. 14-year girl, No. 76. 10-year girl, No. 70; 12-year girl, No. 92.	10-year -----	4 (6) 7 8 (10) 87 (43) (44) (45) (50) 54 (70) (79) (81) (92) 94 95 (98) 104 (106) (110)	13-year girl, No. 12. 13-year girl, No. 19; 16-year boy, No. 8. 15-year girl, No. 5. 12-year girl, No. 11; 15-year girl, No. 4. 15-year boy, No. 18; 16-year boy, No. 6. 12-year girl, No. 50. 6-year boy, No. 31; 8-year boy, No. 43. 12-year boy, No. 57. 6-year girl, No. 27; 9-year girl, No. 42; 11-year boy, No. 41; 12-year girl, No. 55. 12-year boy, No. 86. 14-year girl, No. 48. 7-year girl, No. 65; 12-year girl, No. 92. 5-year boy, No. 18; 12-year boy, No. 109. 12-year boy, No. 112. 6-year girl, No. 56; 9-year girl, No. 77. 13-year girl, No. 72. 15-year girls, Nos. 80, 44. 5-year boy, No. 15; 10-year boy, No. 95. 12-year girl, No. 100. 8-year boy, No. 94. 12-year boy, No. 147; 17-year boy, No. 13.
7-year -----	(61) (9) (19) (21) (40) (54) (57) 60 61 65	8-year boy, No. 105. 6-year boy, No. 17. 9-year boy, No. 38; 11-year boy, No. 5. 9-year boy, No. 47; 12-year boy, No. 41; 13-year boy, No. 29. 5-year girl, No. 15. 9-year girl, No. 54; 12-year boy, No. 95. 6-year girl, No. 50; 9-year boy, No. 117. 11-year girl, No. 106. 14-year girl, No. 76. 10-year girl, No. 70; 12-year girl, No. 92.	11-year -----	(8) (6) (8) 11 (18) (29) 48 (54) (57) (62) 65 (70) 75 (82) (89) (90) (101) (108) 105 (108)	9-year girl, No. 64. 9-year girl, No. 7. 13-year boy, No. 6. 14-year girl, No. 23. 12-year boy, No. 25. 8-year boy, No. 1. 14-year girl, No. 34. 7-year boy, No. 61. 6-year boy, No. 44. 9-year girl, No. 52; 13-year girl, No. 46. 14-year girl, No. 47. 9-year boy, No. 3; 14-year girl, No. 56. 13-year girl, No. 84. 5-year boy, No. 12; 8-year boy, No. 70; 12-year girl, No. 85. 9-year boy, No. 1. 9-year boy, No. 124; 14-year boy, No. 91. 11-year boy, No. 88. 9-year boy, No. 118. 14-year girl, No. 62. 7-year girl, No. 60.
8-year -----	(74) (2) (5) (15) (18) (19) (46) (57) (59) (70) 77 (80) (83) 7 (24) (32) (38) (42) 52 (54) 62 (64) (69)	6-year girl, No. 5; 10-year boy, No. 2; 12-year girl, No. 6. 12-year boy, No. 1. 5-year girl, No. 1. 10-year boy, No. 27. 10-year boy, No. 39. 11-year boy, No. 57; 14-year boy, No. 55. 6-year boy, No. 46. 10-year boy, No. 83. 6-year girl, No. 59; 7-year boy, No. 93. 13-year girl, No. 78. 10-year boy, No. 122. 6-year boy, No. 77. 11-year girl, No. 6. 12-year girl, No. 23. 11-year boy, No. 37. 12-year girl, No. 52; 13-year boy, No. 47. 7-year boy, No. 58. 6-year girl, No. 27; 10-year girl, No. 45; 11-year boy, No. 41; 12-year girl, No. 55. 11-year girl, No. 62; 13-year girl, No. 46. 7-year girl, No. 54; 12-year boy, No. 95. 13-year girl, No. 71. 11-year girl, No. 8. 6-year boy, No. 78; 13-year boy, No. 126.	12-year -----	(6) (8) (11) (15) (27) (28) (29)	6-year girl, No. 5; 8-year girl, No. 2; 10-year boy, No. 2. 10-year boy, No. 1. 10-year girl, No. 8; 15-year girl, No. 4. 9-year boy, No. 4; 17-year girl, No. 1. 14-year girl, No. 12; 16-year boy, No. 7. 9-year girl, No. 8. 6-year boy, No. 26; 17-year girl, No. 2.



## Table of relationship—Continued.

## GIRLS—Continued.

Age.	No.	Relationship.	Age.	No.	Relationship.
		<i>Sister of—</i>			<i>Sister of—</i>
12-year .....	(50)	10-year girl, No. 37.	14-year .....	(24)	9-year boy, No. 15.
	(52)	9-year girl, No. 32; 13-year boy, No. 47.		(34)	11-year girl, No. 43.
	(55)	6-year girl, No. 27; 9-year girl, No. 42; 10-year girl, No. 45; 11-year boy, No. 41.		(47)	11-year girl, No. 65.
	(59)	13-year boy, No. 55; 15-year boy, No. 35.		(48)	10-year girl, No. 54.
	(65)	14-year boy, No. 48.		(52)	8-year boy, No. 63.
	(85)	5-year boy, No. 12; 8-year boy, No. 70; 11-year girl, No. 82.		(56)	9-year boy, No. 3; 11-year girl, No. 70.
	(92)	7-year girl, No. 65; 10-year girl, No. 70.		(61)	10-year boy, No. 86; 13-year girl, No. 68.
	(100)	10-year girl, No. 104.		(62)	11-year girl, No. 105.
	102	15-year girl, No. 29.		(65)	12-year boy, No. 115.
	(103)	5-year boy, No. 18.		(67)	12-year boy, No. 123.
	(105)	5-year girl, No. 29; 9-year boys, Nos. 101, 103.		(76)	7-year girl, No. 61.
13-year .....	(12)	10-year girl, No. 4.		(80)	9-year girl, No. 71; 12-year boy, No. 104; 16-year girl, No. 17.
	(19)	10-year girl, No. 6; 16-year boy, No. 8.	15-year .....	(82)	10-year boy, No. 121.
	(31)	9-year boy, No. 52; 10-year boy, No. 45.		(4)	10-year girl, No. 8; 12-year girl, No. 11.
	40	15-year girl, No. 20.		(5)	10-year girl, No. 7.
	(46)	9-year girl, No. 52; 11-year girl, No. 62.		(6)	15-year boy, No. 12.
	(54)	10-year boy, No. 73.		(20)	18-year girl, No. 40.
	(64)	11-year girl, No. 75.		(29)	12-year girl, No. 102.
	(68)	10-year boy, No. 86; 14-year girl, No. 61.		(30)	10-year girl, No. 95; 15-year girl, No. 44.
	(71)	9-year girl, No. 62.	16-year .....	(44)	10-year girl, No. 95; 15-year girl, No. 30.
	(72)	10-year girl, No. 54.		6	16-year girl, No. 6.
	(78)	8-year girl, No. 77.		(8)	9-year boy, No. 41; 14-year boy, No. 9.
	(79)	10-year boy, No. 107.	17-year .....	(17)	9-year girl, No. 71; 12-year boy, No. 104; 14-year girl, No. 80.
	(83)	12-year boy, No. 131.		(1)	9-year boy, No. 4; 12-year girl, No. 15.
	(100)	14-year boy, No. 65.		(2)	6-year boy, No. 26; 12-year girl, No. 23.
14-year .....	(3)	8-year boy, No. 18.	18-year .....	(6)	16-year girl, No. 6.
	(9)	8-year boy, No. 17.			<i>Mother of—</i>
	(12)	12-year girl, No. 27; 16-year boy, No. 7.	20-year .....	1	3-year boy.
	(23)	11-year girl, No. 11.			

## List of Observers.

## BOYS.

Year.	Numbers.	Year.	Numbers.	Year.	Numbers.
<i>Boas.</i>		<i>Bolton—</i> <i>Cont'd.</i>		<i>Chamberlain.</i>	
5 .....	1-3, 6, 19, 37, 38.	7 .....	39, 40, 51-53, 64, 65, 83, 88, 92-94.	5 .....	5, 7, 8, 24-28.
6 .....	1-23, 66, 67.	8 .....	34-37, 39, 56-59, 79-86.	6 .....	24-28, 32-38, 52, 90-94.
7 .....	1-4, 7-38, 41, 98, 106-108.	9 .....	50-57, 79-86, 113-118.	7 .....	42-50, 61-63, 82, 117-122.
8 .....	1-9, 15-33, 40-42, 94, 108.	10 .....	50, 73-76, 105, 106.	8 .....	10-14, 43-47, 73, 109, 110.
9 .....	2-34, 36-46, 48, 49, 123-125, 131.	11 .....	40, 60, 61, 101, 102.	9 .....	62, 68-70, 108-112.
10 .....	1-38, 40-44, 113-119.	12 .....	97-101, 119, 146.	10 .....	56, 57, 59, 100-104.
11 .....	1-30, 62-65, 111, 112.	13 .....	84-88, 116.	11 .....	49, 50, 85-88, 98-100.
12 .....	1-44, 46, 79, 87-92, 130, 141, 142, 146, 175.	14 .....	65-68.	12 .....	66-74, 77, 109-111, 146.
13 .....	4-28, 36-43, 70-77, 116.	15 .....	32, 66.	13 .....	63, 64, 99-106, 116, 168.
14 .....	3-26, 80, 61.	16 .....	15.	14 .....	50-53, 79-82, 85.
15 .....	4-17, 19-25, 46-48, 66.	<i>Brown.</i>		15 .....	64-66, 69-73, 75, 76.
16 .....	6-12, 18, 19, 37, 40.	7 .....	145.	16 .....	35, 36, 38, 39.
18 .....	15.	9 .....	150-154.	17 .....	13.
<i>Bolton.</i>		10 .....	134-137.	18 .....	8, 15.
5 .....	13, 14.	11 .....	123-126.	<i>Dorsey.</i>	
6 .....	29, 30, 39, 56-58, 60-62.	12 .....	159, 160.	18 .....	29-35.
		15 .....	149.	14 .....	27-31.
				15 .....	18, 26-29.
				16 .....	13-16.

*List of Observers—Continued.*

## BOYS—Continued.

Year.	Numbers.	Year.	Numbers.	Year.	Numbers.
<i>Hodgkins.</i>		<i>Saville.</i>		<i>West—Cont'd.</i>	
11.....	140.	11.....	80-83.	7.....	66-81, 84-87, 89-91, 95,
12.....	169.	12.....	102-107.		96, 109-116, 123, 134-
13.....	165, 166.	13.....	89-91.		144, 146, 149-158.
15.....	152.			8.....	38, 48-50, 53, 60-77, 87-
<i>Reigart.</i>		<i>Stillings.</i>			93, 111, 115-118, 120,
5.....	4.	7.....	97.		121, 125, 127, 130, 134-
6.....	31.	9.....	121, 122.		137.
7.....	54-60.	10.....	107-112.	9.....	47, 58-61, 71-78, 87-105,
8.....	51, 52.	11.....	103-110.		119, 132, 133, 143-145,
9.....	63-67.	12.....	131-140.		161-182.
10.....	55.	13.....	118-125.	10.....	45-49, 51-54, 60-72, 77-
11.....	44-48.	14.....	92.		90, 151, 154-171.
12.....	62-64.	15.....	53.	11.....	31-39, 41-43, 51-59, 66-
13.....	53-60.				70, 84, 89-95, 130, 147-
14.....	34-49, 55.	<i>West and Chamberlain.</i>		12.....	172.
15.....	39-44.				45, 47-61, 65, 78, 80-86,
16.....	17.				93-96, 108, 112-118,
17.....	4.				158, 167, 168, 170-172,
18.....	7.				176-202.
<i>Riddle.</i>				13.....	44-52, 61, 63, 69-69, 78-
12.....	120-126.				87, 92-98, 107-109,
13.....	111-115, 117.				127-133, 154, 155, 161-
14.....	87-91.				164, 167, 170, 173-175.
15.....	49-52.			14.....	32, 33, 56-59, 62-64, 69-
16.....	26.				78, 83, 84, 86, 94-125,
<i>Ruoff.</i>					146-150, 153-156, 158,
14.....	157.				162, 164, 165, 168, 169.
15.....	153.			15.....	30, 31, 45, 64-63, 74, 77-
					143, 148, 157-159.
				16.....	20-25, 42-91, 94-98.
				17.....	5, 6, 16-47.
				18.....	23-50.

*List of Schools.*

## BOYS.

Year.	Numbers.	Year.	Numbers.	Year.	Numbers.
<i>Woodland Street.</i>		<i>Miss Lewiston's.</i>		<i>Worcester Academy..</i>	
5.....	1-3, 37, 38.	5.....	34, 35.	9.....	1.
6.....	1-23.	6.....	105.	12.....	146-148.
7.....	1-38.	7.....	144.	13.....	116.
8.....	1-31.			14.....	89.
9.....	2-44.	<i>Freeland Street.</i>		15.....	66-76.
10.....	1-40.			16.....	27-41.
11.....	1-27.			17.....	7-15.
12.....	1-36.	5.....	5, 6.	18.....	8-22.
13.....	4-28.	6.....	24-60.		
14.....	3-22.	7.....	30-53.	<i>Webster Square.</i>	
15.....	4-17.	8.....	32-47.	5.....	4, 7, 8.
16.....	6-11.	9.....	45-57, 59, 62.	6.....	31-38.
<i>Sycamore Street.</i>		10.....	41-50.	7.....	54-63.
5.....	11, 12.	11.....	28-37, 40.	8.....	48-52.
6.....	51.	12.....	37-54.	9.....	58, 60, 61, 63-70.
7.....	76-81.	13.....	29-51.	10.....	51-55.
8.....	67-76.	14.....	23-33.	11.....	38, 39, 41-46.
9.....	90-100, 167.	15.....	18-32.	12.....	55-61.
10.....	78-92.	16.....	12-16.	13.....	52.
11.....	62-79.			<i>H. M. A.</i>	
12.....	88-96.	13.....	127-133.	13.....	1-3.
13.....	70-81.	14.....	94-110, 112-125.	14.....	1, 2.
14.....	58-63.	15.....	77-142.	15.....	1-3.
15.....	45-48.	16.....	42-75, 77-89.	16.....	1-5.
16.....	18, 19.	17.....	16-47.	17.....	1-3.
		18.....	23-48.	18.....	1-6.

*List of Schools—Continued.*

## BOYS—Continued.

Year.	Numbers.	Year.	Numbers.	Year.	Numbers.
<i>Clark University.</i>		<i>Winslow Street.</i>		<i>Chandler Street—Cont'd.</i>	
15.....	154.	5.....	13-18.	17.....	4.
<i>Downing Street.</i>		6.....	52-64, 112.	18.....	7.
5.....	36.	7.....	82-96.	<i>Oxford Street.</i>	
8.....	122, 125, 129, 131.	8.....	77-93, 120, 121.	5.....	19-21.
9.....	169, 170, 187.	9.....	101-119, 162, 166.	6.....	65-83.
10.....	160, 163, 166, 169, 171.	10.....	93-106, 149-153.	7.....	97-109.
11.....	151, 154.	11.....	80-102, 141-143.	8.....	94-108.
12.....	176, 177, 200, 202.	12.....	97-119, 172-174.	9.....	120-130.
<i>Dix Street.</i>		13.....	82-110, 168.	10.....	107-123.
5.....	29-33.	14.....	64-86, 111, 152, 157, 161, 169.	11.....	103-114.
6.....	97-104.	15.....	54-65, 153.	12.....	120-145.
7.....	124-143.	16.....	20-25, 94-96.	13.....	111-115, 117-126.
8.....	112-118.	17.....	5, 6.	14.....	87-92.
9.....	134-147.	<i>Chandler Street.</i>		15.....	49-53.
10.....	124-131.	5.....	9, 10.	16.....	26.
11.....	115-121.	6.....	39-50.	<i>Belmont Street.</i>	
12.....	149-153.	7.....	64-75.	5.....	22-28.
13.....	134-155.	8.....	59-66.	6.....	84-96.
14.....	136-144.	9.....	71-89, 161.	7.....	110-123, 145.
15.....	143-148.	10.....	56-77.	8.....	109-111, 119.
16.....	90-99.	11.....	47-61.	9.....	132, 133, 148-160.
17.....	48, 49.	12.....	62-85.	10.....	132-148.
18.....	49.	13.....	53-63.	11.....	122-140.
		14.....	84-87.	12.....	150-171.
		15.....	53-44.	13.....	156-167.
		16.....	17.	14.....	145-151.
				15.....	149-152.

*List of Observers.*

## GIRLS.

Year.	Number.	Year.	Number.	Year.	Number.
<i>Boas.</i>		<i>Chamberlain.</i>		<i>Reigart.</i>	
5.....	1-9.	5.....	38.	5.....	13-15.
6.....	1-11, 60.	6.....	44, 73-77.	6.....	22, 24-28.
7.....	1-19, 71-77.	7.....	28-30, 56, 84-86.	7.....	34-35, 36-43.
8.....	1-21, 27-30, 53, 76-82.	8.....	31-32, 33-39, 40, 61-65.	8.....	36-37.
9.....	1-29, 33-34.		84.	9.....	41-43.
10.....	31, 99-113.	9.....	74-82, 89.	12.....	58-60.
11.....	5-33, 41-42, 70.	10.....	88-90.	13.....	41-49.
12.....	5-38, 40-42, 47-49, 74-77.	11.....	95, 97, 112-115.	14.....	44-50.
13.....	6-25, 56-59, 61-65.	12.....	101-102, 106-107.	15.....	21-25.
14.....	1-29, 29-30, 37, 55-59.	13.....	97-99.	16.....	15-16.
15.....	1-16, 42.	14.....	73-80.	17.....	4.
16.....	1-11.	15.....	43-46.	<i>Riddle.</i>	
<i>Bolton.</i>		16.....	—.	10.....	70.
5.....	10-12, 25-27.	17.....	—.	11.....	89.
6.....	12-21, 45, 49, 55.	18.....	13.	12.....	89, 93-94.
7.....	20-22, 31-33, 41, 45.	<i>Dorsey.</i>		13.....	76, 83-87.
8.....	23-26, 33-34, 42-46, 66-68, 72-74.	12.....	39.	15.....	40-41.
9.....	32, 51-53, 83-86, 88.	14.....	27-28.	16.....	22.
10.....	91-95.	<i>Gerro-dette.</i>		17.....	5.
11.....	116-118.	12.....	90.	<i>Ruoff.</i>	
12.....	50, 54.	14.....	72.	12.....	135.
13.....	36.	<i>Hodgkins.</i>		13.....	140.
14.....	36, 38-40, 69.	12.....	159-159.	14.....	115.
<i>Brown.</i>		13.....	137, 139.	<i>Saville.</i>	
9.....	103-107.	<i>Lee.</i>		12.....	87.
10.....	39, 134-136.	17.....	6-10.	13.....	79-75.
11.....	132-134.	18.....	1-12.	14.....	70.
12.....	—.				
13.....	26, 127.				

## List of Observers—Continued.

## GIRLS—Continued.

Year.	Numbers.	Year.	Numbers.	Year.	Numbers.
<i>Stillings.</i>		<i>West.—</i> <i>Cont'd.</i>		<i>West.—</i> <i>Cont'd.</i>	
8.....	75.	8.....	22, 35, 41, 47-52, 54-60,	13.....	27-35, 37-40, 50-55, 60,
9.....	63.		60-71, 83, 85-114.		60-72, 77-82, 95-98,
10.....	2, 71-76.	9.....	30-37, 35-40, 44-50,		100-101, 103-126, 128-
11.....	1-4, 90-93, 98-101.		54-62, 64-73, 87, 90-		133, 141-143.
12.....	1-4, 95-99, 108.		102, 108-119.	14.....	31-36, 41-43, 51-54, 60-
13.....	1-5, 98-93, 102.	10.....	1, 32-39, 40-60, 77-87,		60, 71, 81, 89-114,
14.....	82-88.		96-99, 114-133, 137-		116-118.
			182.	15.....	17-19, 26-30, 47-112.
<i>West.</i>		11.....	34-40, 43-60, 71-88, 94,	16.....	12-14, 17-21, 23-91.
5.....	10-24, 28-37, 30-41.		96, 102-111, 119-131,	17.....	3, 19-60.
6.....	23, 29-43, 46-48, 50-54,	12.....	135-155.	18.....	30-49.
	56-59, 61-72, 78-93.		43-46, 51-53, 55-57,		
7.....	23-27, 37, 42-44, 46-55,		61-73, 78-86, 86, 91-		
	57-70, 73-83, 87-104.		92, 103-105, 109-155,		
			159-164, 167-169.		

## List of Schools.

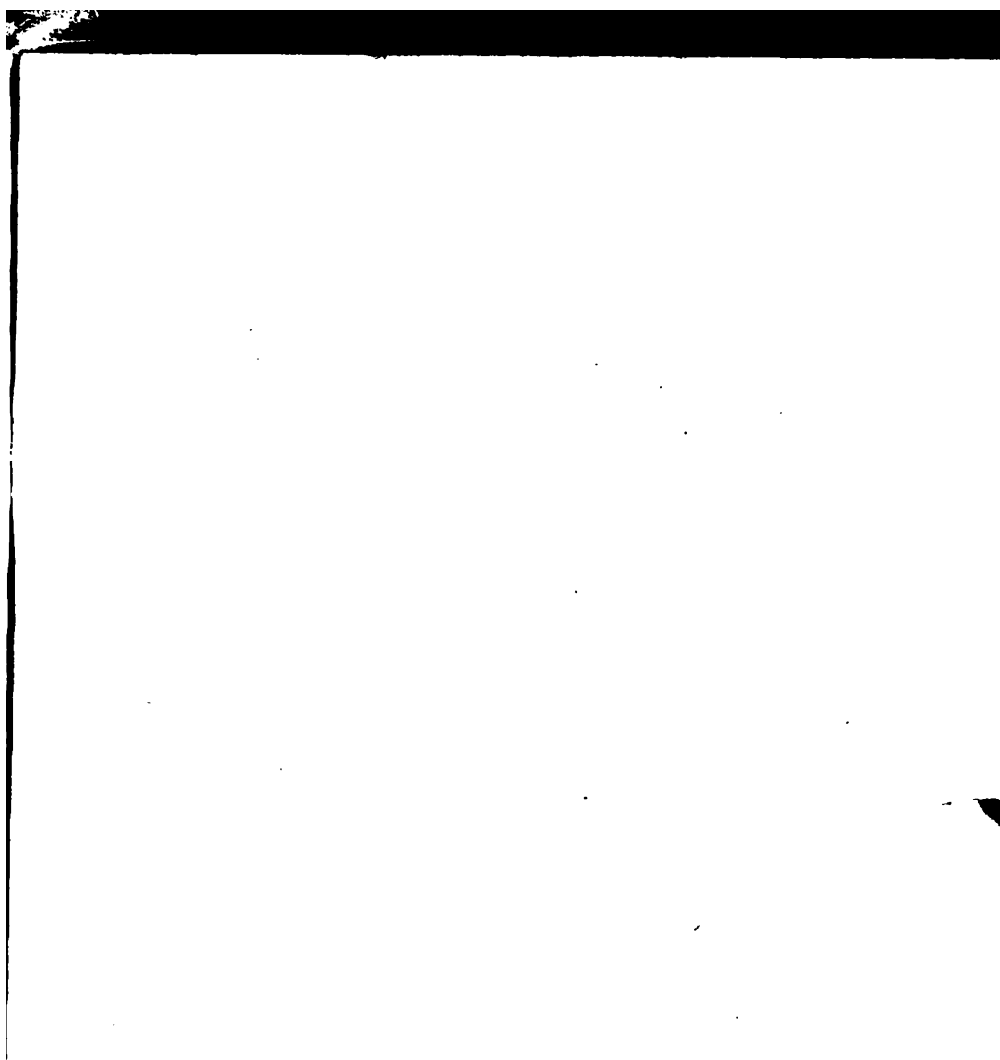
## GIRLS.

Year.	Numbers.	Year.	Numbers.	Year.	Numbers.
<i>Wood-</i> <i>land</i> <i>Street.</i>		<i>Freeland</i> <i>Street—</i> <i>Cont'd.</i>		<i>Salem</i> <i>Street.</i>	
5.....	1-9.	9.....	30-34.	7.....	103.
6.....	1-10.	10.....	30-31, 33-39.		
7.....	1-19.	11.....	34-47.	<i>Dix</i> <i>Street.</i>	
8.....	1-22.	12.....	38-54.	5.....	39.
9.....	1-30.	13.....	24-36, 107.	6.....	78-82.
10.....	3-29.	14.....	28-40.	7.....	87-99.
11.....	5-53, 153.	15.....	13-18.	8.....	85-96.
12.....	5-37, 169.			9.....	91-101.
13.....	6-23, 96.	<i>High</i> <i>School.</i>		10.....	115-133.
14.....	1-25, 118.	13.....	109.	11.....	119-129.
15.....	1-12.	14.....	88-96, 100.	12.....	115-135.
16.....	1-11, 83.	15.....	48-97, 99.	13.....	111-123.
17.....	1-2.	16.....	27-73, 75-79, 81-82, 84-	14.....	101-109.
			85.	15.....	100-106.
<i>Sycamore</i> <i>Street.</i>		17.....	19-69.	16.....	86-90.
5.....	20-23.	18.....	30-48.	<i>Winslow</i> <i>Street.</i>	
6.....	42-43.			5.....	24-30.
7.....	49-55.	<i>Webster</i> <i>Square.</i>		6.....	44-59, 85-88.
8.....	58-60, 110-111.	5.....	13-15.	7.....	56-70, 83, 101.
9.....	54-62.	6.....	22-23.	8.....	61-74, 105-106, 114.
10.....	59-69.	7.....	34-40, 102.	9.....	71-88, 114-117.
11.....	70-88.	8.....	35-39, 107.	10.....	70, 77-97, 151-159.
12.....	74-86.	9.....	35-43.	11.....	95-97, 100-118, 145-
13.....	66-71.	10.....	40-46.		150, 155.
14.....	55-61.	11.....	48-55.	12.....	87-92, 101-114, 162-165.
15.....	26.	12.....	55-61.	13.....	72-82, 97-106, 108, 140-
<i>Miss Lew-</i> <i>iston's.</i>		13.....	37-39.		141.
5.....	40.	14.....	41.	14.....	62-81, 113-115.
6.....	83-84.	<i>Downing</i> <i>Street.</i>		15.....	27-38, 43-47, 98, 109-
7.....	100.	5.....	41.		111.
13.....	124-126.	6.....		16.....	17-20, 23-24, 91.
14.....	110-111.	7.....	104.	<i>Chandler</i> <i>Street.</i>	
<i>Freeland</i> <i>Street.</i>		8.....	109.	5.....	16-19.
5.....	10-12.	9.....	119.	6.....	29-41.
6.....	11-21.	10.....	1, 162.	7.....	41-48.
7.....	20-23.	12.....	166.	8.....	40-57, 113.
8.....	23-34.	13.....		9.....	44-53.
		15.....	112.	10.....	47-58, 161.

*List of Schools—Continued.*

## GIRLS—Continued.

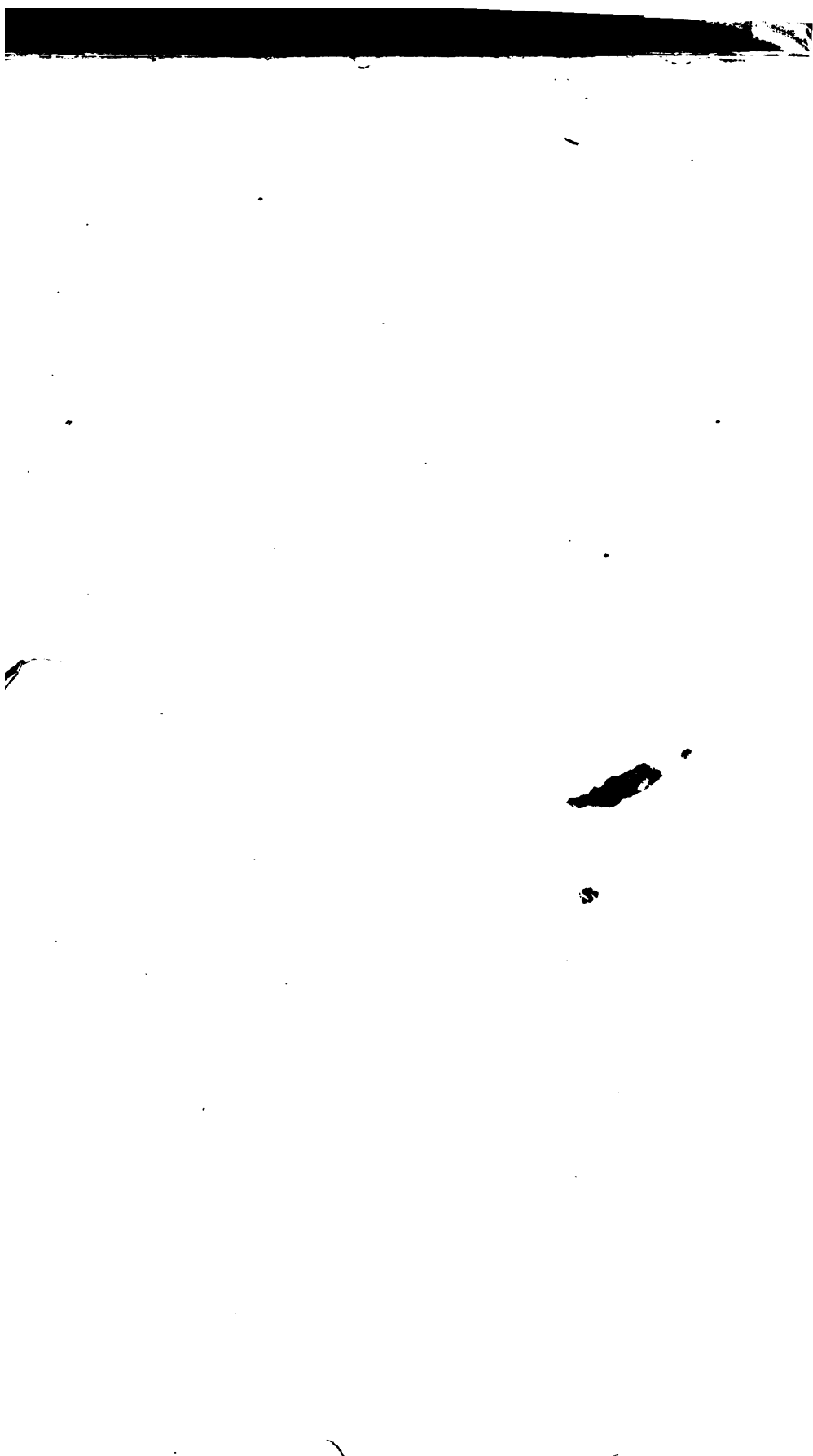
Year.	Numbers.	Year.	Numbers.	Year.	Numbers.
<i>Chandler Street— Cont'd.</i>		<i>Oxford Street— Cont'd.</i>		<i>Belmont Street— Cont'd.</i>	
11.....	56-69, 154.	10.....	2, 71-76, 99-113.	9.....	89-90, 102-113.
12.....	62-73, 167.	11.....	1-4, 89-94, 98-99, 151.	10.....	114, 134-147, 149-150.
13.....	40-55.	12.....	1-4, 93-100.	11.....	130-144.
14.....	42-54, 112.	13.....	1-5, 83-86, 143.	12.....	136-161.
15.....	19-25.	14.....	82-87.	13.....	127-131, 136-139.
16.....	12-16.	15.....	39-42.	14.....	97-99.
17.....	3-4.	16.....	21-22.	15.....	107-108.
		17.....	5.	16.....	74, 80.
<i>Oxford Street.</i>		<i>Belmont Street.</i>		18.....	49.
5.....	31-32.			<i>Normal School.</i>	
6.....	60-66.		33-38.		
7.....	71-82.	6.....	67-77.	16.....	25-28.
8.....	75-83.	7.....	84-86.	17.....	6-12, 14-17.
9.....	63-70.	8.....	84, 97-104.	18.....	1-13, 21-23, 26-29.













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